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SOME INFLUENCES OF FRENCH SCIENCE ON MEDICINE

THE PASTEUR LECTURE

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In a beautiful apartment in the Latin Quarter of Paris there lives today an elderly gentleman, the grandnephew of Lavoisier, Monsieur de Chazelles. On one wall of a salon in the apartment hangs a large painting by David of Lavoisier and his wife, both represented life size. Lavoisier, seated at his desk, has just stopped writing to turn his face toward his wife, and she stands with her arm on his shoulder. Chemical apparatus are on the table and lie on the floor.

On another wall a fine portrait represents an ancestor as he appeared at the court of Louis XIV. And in the same room one finds a portrait of Benjamin Franklin which the latter sent to Lavoisier with a letter to the effect that it was one of two painted by a Frenchman then in America, and that he considered them the best portraits ever made of him.

In the adjoining study of M. de Chazelles hang two drawings by Madame Lavoisier which were executed after the death of Lavoisier and retouched by David, who was Madame Lavoisier's master. These drawings represent her recollection of the first respiration experiments ever made on man. And in the desk in the same room are letters and papers of Franklin which have never been published, and which from his day to the present have been in the possession of the descendants of Lavoisier. There is a letter which contains drawings of a kite suggested to Franklin by a sailor, and a description of how he would improve it; there is an account, illustrated with drawings, of a small boat which could be propelled by forcing water from the stern by means of a piston; and there is a discussion of a suggestion that sugar was stained red with human blood; but Franklin arrives at the conclusion that when one contemplates the wars waged for the possession of the West Indies and the loss of negro slave life associated with the culture of the sugar cane, all the sugar consumed in Europe is to be considered as soaked crimson with blood.

I owe the privilege of seeing these things to my friend, Professor Jean le Goff of Paris, to whom I also owe the possession of the most important French classics on metabolism, including the sumptuous "Oeuvres de Lavoisier" published by the French government during the reign of Napoleon III. For all these treasures I am deeply grateful to him.

Lavoisier and Franklin were intimate friends, living near each other in Paris, and Franklin dined frequently with the great French chemist and his wife. In a letter written to Franklin on Feb. 5, 1790, during the early days of the French Revolution, Lavoisier says:

> After having recited what has transpired in chemistry, it is well to speak of our political revolution. We regard it as accomplished, well accomplished and beyond recall. There still exists, however, an aristocratic party which is making vain efforts but is evidently feeble. . . . We greatly regret at this moment your absence from France. You could be our guide and mark the limits beyond which we ought not to pass.

The family of Antoine Laurent Lavoisier traced its ancestry back seven generations to Antoine Lavoisier who was a post-boy in the stables of the king, and who died in 1620. Successive generations raised the position of the family name to ever higher levels, until it was said of the great Lavoisier that it would require perhaps a hundred years for the appearance of his equal. Native intelligence, a fine education and great wealth, combined with the environment of the searchingly critical atmosphere of the Paris of his day, allowed of the vivid inspiration which filled his life.

CHEMICAL PHYSIOLOGY BEFORE LAVOISIER

Perhaps it may be fruitful to inquire into the state of chemical physiology preceding the time of Lavoisier. Robert Boyle, in 1660, showed that the flame of a candle or the life of an animal was extinguished after placing them in an air pump. A contemporary of Boyle, John Mayow of London, believed that air contained "nitro-aerial particles" which supported combustion and animal life. He also showed that such particles added to the weight of antimony when that metal is burned by the sun's rays, and that the nitro-aerial particles contained in saltpeter, which are able to burn sulphur, are the same particles as those found in air. This was the first discovery of oxygen, but it was entirely forgotten; and later, when Lavoisier asked Magellan to seek for a copy of Mayow's publication, it was not to be found in any of the libraries of London.[1]

The German chemist Stahl, who in 1716 moved to Berlin as physician to the king of Prussia, was the originator of the phlogiston theory of combustion, which enthralled the minds of men for nearly a hundred years. According to this theory, all combustible substances contained phlogiston, which passes from them when they are burned. What we now know as oxids of iron or lead were those metals which, through burning, had lost their phlogiston. Such substances, if calcined with carbon, a material supposed to be rich in phlogiston, absorbed phlogiston and became metals

1. Grimaux: Lavoisier, 1896, p. 107.

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once more. This simple theory availed to explain all the phenomena of combustion, and it was generally accepted by the scientific world.

The great physiologist, Albrecht von Haller, who died in 1777, writing his "Elementa Physiologica" [2] in the middle of the eighteenth century, has this rather hazy conception of the process of respiration:

> The secondary uses of respiration are very numerous. It exhales copiously and removes from the blood something highly noxious; for by remaining in the air it will cause suffocation; and the breath of many people crowded in a close and small place impregnates the air with a suffocating quality. On the other hand, it absorbs from the air a thin vapor of which the use is not sufficiently known.

Benjamin Franklin in "Poor Richard," 1746, thus poetically popularizes the ideas of his time:

> "Like cats in air pumps to subsist we strive,
> On joys too thin to keep the soul alive."

It must be remembered that in those days many chemists still based their ideas on the assumption of the four elements of Empedocles, air, fire, earth and water; ideas which were to be overthrown when air was shown to be a mixture of gases, and water a chemical compound of gases.

One of Lavoisier's close friends was Joseph Black, professor of chemistry at Edinburgh. Black, in 1754, had found that magnesia alba, when heated, lost half its weight, and that it gave off a gas when treated with acids. The gas eliminated he called "fixed air." He also found the same "fixed air" produced in fermentation, in the combustion of carbon and in expired air. Black in these experiments discovered carbon dioxid.

Nitrogen was the next gas to be revealed. In 1772, Rutherford, a friend and colleague of Black, found that when a candle was burned in an enclosed vessel until it went out and the "fixed air" was then absorbed by alkali, there remained a large volume of air which extinguished life and flame in an instant. This irrespirable gas was subsequently called nitrogen.

A year before this Priestley, in 1771, introduced a growing sprig of mint into an atmosphere in which a candle had burned out, and after a lapse of several days found that another candle burned in it perfectly. Evidently the burning candle filled the space with phlogiston; the growing plant absorbed the phlogiston and produced "dephlogisticated air." This could again receive phlogiston when the second candle burned.

Shortly after this discovery (1774), Priestley submitted red mercuric oxid to the heat of a burning glass and found that an air was evolved in which a candle burned very vigorously. Priestley assumed that this air was pure dephlogisticated air, while common air was only partly dephlogisticated.

Priestley explained the presence of Black's "fixed air" in the expired air thus: "It will follow that in the precipitation of lime by breathing into lime water, the fixed air which incorporates with lime comes not from the lungs, but from the common air, decomposed by the phlogiston exhaled from them." And Priestley, who was one of the discovers of oxygen, was gathered to his fathers at Northumberland, Pa., in 1804, still believing the phlogiston theory of combustion.

Independent of Priestley and before him, Scheele, a Swedish apothecary and eminent chemist, discovered oxygen by decomposing manganese dioxid and other substances. Scheele believed that the atmosphere was composed of "spoiled air" and "fire air." When a body burned in air it lost its phlogiston, which united with "fire air." Heat consisted of "fire air" united with phlogiston. It passed through glass. In this way a portion of air could pass through glass.[3]

In 1771, Scheele [4] found that when silver carbonate was heated in a retort, "fixed air" was liberated, as well as "fire air," while a residue of metallic silver remained. In 1775, he placed silver carbonate in a small retort connected with a collapsed bladder and then heated the substance. Two airs were evolved: "fixed air," which he removed with lime water, and "fire air," in which a flame burned brightly. In the interim between these two experiments he wrote Lavoisier in Paris a letter [5] dated Sept. 30, 1774, asking him to use his powerful burning glass on silver carbonate, then to absorb the "fixed air" in lime water and to observe whether a candle would burn and an animal live in the remaining air, and he begged Lavoisier to inform him of the results.

Scheele [6] performed another striking experiment. He placed two large bees, together with a little honey, in a small upper chamber of a glass apparatus which he had devised. This upper chamber was in communication with a glass cylinder. He filled the glass cylinder with "fire air" and immersed its lower end in lime water. The volume of air within the receptacle diminished day by day, and the lime water which absorbed the carbon dioxid rose in the tube. After eight days the bees were both dead, and the lime water almost completely filled the space.

It is evident that Scheele had introduced bees into pure or nearly pure oxygen gas, and that the carbon dioxid which they produced had been completely absorbed by the lime water.

Scheele made no direct comment on this truly beautiful experiment, but in the general criticism of several experiments one may read the following hazy generalization:

> Why do not the blood and lungs change "fire air" into "acid air"? I take the liberty to express my opinion concerning this, for what would such exacting experiments profit unless through them I had the hope to more nearly approach my ultimate aim, the truth. Phlogiston, which combines with most substances, causing them to become more fluid, more mobile and more elastic, must have the same influence upon the blood. The blood corpuscles must absorb it from the air through delicate openings in the lungs. Through this combination they are expanded and in consequence become more fluid. In some part of the circulation they must give off this absorbed phlogiston and consequently be able to again absorb this fine principle when they next reach the lungs. Whither the phlogiston goes during the circulation I will leave to others to find out. The affinity of blood for phlogiston cannot be as great as in the instance of plants and insects which take it from the air, and also the blood cannot convert it into "acid air," but it is changed into a kind of air which is midway between "fire air" and "acid air"—it is "spoiled air." For it does not unite with lime water or water as does "fire air," though it extinguishes fire as does "acid air."

Scheele's "spoiled air" was nitrogen. The poor, struggling apothecary, who had made so many careful and accurate experiments and who was one of the greatest chemists of his time, was unable to interpret his results without adherence to the dominant fetish of phlogiston.

2. First Lines of Physiology, Trans. of Third Latin edition by William Cullen, Edinburgh, 1801, p. 131.

3. Scheele: Briefe, p. 79, a letter of November, 1775.

4. Scheele: Physische und chemische Werke, Berlin 1: 90, 1793; Briefe, pp. 80, 407 and 466.

5. Scheele: Briefe, p. 406.

6. Scheele: Ueber Luft und Feuer, 1777; see Physiche und chemische Werke, Berlin, 1793, p. 209.

We have here the picture of two earnest men, Priestley and Scheele, both absorbingly interested in chemistry, both contributing important knowledge and ranking among the greatest scientists of their day, and yet neither had the philosophical acumen to understand the meaning of their experiments. Priestley was a Dissenting clergyman earning his living by preaching, but in his old age his house was burned by loyalists, and he shortly afterward fled to America. Scheele, though honored by scientific men the world over, remained a poor apothecary to the end of his days. In the current parlance of today, these two great contributors to human knowledge would undoubtedly have been known outside their own circles as "narrow minded scientists."

This, however, could never have been said of Lavoisier, who repeated and extended their experiments, overthrew the phlogiston theory, and established modern chemistry.

EARLY WORK OF LAVOISIER

Lavoisier was elected a member of the Académie des sciences in 1768, at the age of 24. About the same time, desirous of promoting his personal fortune, he became associated with la ferme générale, through whose activities taxes were collected in France. Some of his fellow academicians looked askance at this undertaking, but the mathematician Fontaine is reported to have remarked, "Never mind, he will be able to give us better dinners." [7]

In the ferme générale the young man was the subordinate of one Paulze, a nephew of the then all powerful Terray, minister of state and controller of finance. At the age of 28 Lavoisier married the 14 year old daughter of Paulze. His own position and his marriage brought him great wealth but in no way diminished his tireless activity. He congratulated himself that his patronage of the instrument makers of Paris had rendered France independent of Great Britain in the manufacture of scientific instruments.

Lavoisier's first paper before the Académie was "On the Nature of Water and on Those Experiments which Pretend to Prove Its Transformation into Earth." In this experiment he hermetically sealed rain water in a flask and heated it for 101 days. Mineral matter appeared in the flask but the whole did not change in weight, and the mineral material that appeared was shown to be derived from the disintegration of the flask itself, which lost in weight. Lavoisier used an extremely sensitive (très-exacte) balance, made by the official who was charged with the weighing of gold.

Here we witness the overthrow of a dogma more than 2,000 years old, accomplished by the introduction of the quantitative method into chemistry. One may recall the words of Lavoisier written in his "Elements of Chemistry." [8]

> As the usefulness and accuracy of chemistry depend entirely upon the determination of the weights of the ingredients and products both before and after experiments, too much precision cannot be employed in this part of the subject, and for this purpose we must be provided with good instruments. . . . I have three sets (of balances) of different sizes made by M. Fontin with the utmost nicety; and excepting those made by Mr. Ramsden of London I do not think that any compare with them in precision and sensibility.

Lavoisier had a balance which could weigh 600 gm. within 5 mg., and another which was sensitive to within a tenth of a milligram, which were quite up to modern standards of accuracy. One may visit the Conservatoire des arts et métiers in Paris and see there a notable collection of Lavoisier's apparatus. One sees a gasometer for the accurate measurement of gases; there is the celebrated ice calorimeter of Lavoisier and La Place; there also are barometers of finest workmanship, set in mahogany supports decorated with gilded filigree work, reminding one of the choicest furniture. These treasures were placed in the cellar of the Conservatoire during the bombardment of Paris by the Germans in the late war.

Concerning the gasometers, Lavoisier [9] wrote:

> It becomes expensive because in many experiments, such as the formation of water and of nitric acid, it is absolutely necessary to employ two of the same machines. In the present advanced state of chemistry very expensive and complicated instruments are become indispensably necessary for ascertaining the analysis and synthesis of bodies with the requisite precision as to quantity and proportion.

It is strange that Lavoisier's insistence on the use of accurate, quantitative measurements, through the application of which nearly a hundred and fifty years ago he brought about the "Chemical Revolution," should appear as new truth when enunciated by some of our ultramodern scientists.

In the heart of France near Puy-du-Dom, at Château de la Carrière, now owned by Monsieur de Chazelles, there is a veritable museum of scientific apparatus which formerly belonged to Lavoisier.[10] There are several thermometers of great accuracy and a fine balance, and there are three large glass globes, one capable of holding 15 liters of air, another 12 liters and a third 7 liters; also many other treasures of great historical value. Lavoisier made his experiments before the days when rubber and cork reduced laboratory expenses. His glass tubes and receptacles were united with finely polished brass joints.

We may imagine this accomplished Frenchman at work in his laboratory, or in his library, or receiving information from visitors to the fashionable and brilliant capital of France. It is related [11] that Priestley dined with Lavoisier in Paris in October, 1774, and informed him concerning the production of "pure dephlogisticated air" from mercuric oxid, and we may also recall that Scheele, on September 30 of the same year, wrote to Lavoisier asking him to expose silver carbonate to the heat rays of a large burning glass and produce "fixed air" and "fire air" from them.

Ten days after his conversation with Priestley, and again during the month of the following March, Lavoisier went to Montigny to visit his friend Trudaine, who was the owner of an immense burning glass 42 inches in diameter which had cost 15,000 livres (about $3,000), and here repeated Priestley's experiments. In the paper read before the Académie des sciences at Easter, 1775,[12] Lavoisier stated that he took the red mercury calx and heated it with carbon and obtained "fixed air," and when he heated the same without carbon a gas was evolved in which a flame burned with the splendor of phosphorus in air, and that this gas was the "air eminently respirable." The loss in weight of the mercury calx was equal to the weight of the "air eminently respirable" given off. He concluded that "fixed air" was the result of the union of carbon with "air eminently respirable."

7. Grimaux: Lavosier, 1896, p. 32.
8. Lavoisier: Elements of Chemistry, trans. by Robert Kerr, Philadelphia, 1799, p. 375.
9. Elements of Chemistry, Philadelphia, 1799, p. 397.
10. Truchot: Ann. de chim. et de phys. **18**: 289, 1879.
11. Thorpe: Essays in Historical Chemistry, 1902, p. 160.
12. Oeuvres de Lavoisier, Paris **2**: 122, 1862.

In a subsequent paper [13] he reported that it was this "air eminently respirable" which was absorbed by phosphorus and sulphur when they burn with the production of phosphoric and sulphuric acids.

Having determined these facts, Lavoisier proceeded to determine the effect of a sparrow on the content of air in a confined space. In a brief memoir,[14] published in 1777, he enunciated the principle that during respiration it was only "air eminently respirable" (oxygen) which disappeared from the atmosphere when an animal was put into a confined space, and that this air was supplanted by expired "aeriform calcic acid" (carbon dioxid); that when metals were calcined in air, oxygen was absorbed until its supply was exhausted; that if after an animal had perished in a confined space, the carbon dioxid in the atmosphere was absorbed by alkali, the "foul air" remaining was the same kind of air as that found after metals had been calcined in air in an enclosed space. All the former qualities of this air could be restored by adding to it "air eminently respirable."

Three years later, Lavoisier and La Place [15] made another step in advance. They noticed that a guinea-pig produced 224 grains of carbon dioxid in ten hours, and that what would now be called the respiratory quotient was 0.84. Then they put a guinea-pig in their recently constructed ice calorimeter and found that the heat given off by the animal melted 13 ounces of ice in a period of ten hours. Next they calculated that if carbon was oxidized so that 224 grains of carbon dioxid were produced, 10.4 ounces of ice would have been melted. They realized that, in the case of the guinea-pig, allowances would have to be made: (1) because the legs of the animal became chilled during the experiment; (2) because the water of respiration was added to that of the melted ice, and (3) because the influence of cold increased the heat production of the animal. But they nevertheless stated that:

> Since we have found in the preceding experiments that the two qualities of heat obtained are nearly the same, we can conclude directly and without hypothesis that the conservation of animal heat in the animal body is due at least in greater part to the transformation of "air pur" (oxygen) into "air fixé" (carbonic acid) during the process of respiration.

Here be it noted that Lavoisier refers to the conservation of animal heat more than fifty years before the general law of the conservation of energy was enunciated. He also observed that two sparrows produced about the same quantity of carbon dioxid in the unit of time as did a guinea-pig.

About a year after these experiments (1781), Cavendish in England found that when two volumes of "inflammable air" (or hydrogen) and one volume of Priestley's "dephlogisticated air" were united by an electric spark, the airs disappeared and water resulted. Cavendish concluded that dephlogisticated air was water deprived of its phlogiston.

It is said that Lavoisier, hearing of these experiments from Blagden, secretary of the Royal Society of London, repeated them.[16] But the important point is that Lavoisier was the first really to understand the phenomenon. In a memoir presented to the Académie des sciences in 1783,[17] he stated that water is merely a combination of "inflammable air" and oxygen, and that any heat or light produced by their union is imponderable.

In the same year, Lavoisier completely demolished the phlogiston hypothesis, and concluded his memoir "Reflections Upon Phlogiston" with these words: [18]

> My object in preparing this memoir has been to record the new developments of the theory of combustion which I published in 1777, to show that the phlogiston of Stahl, which he gratuitously supposed existed in metals, sulphur, phosphorus and all combustible substances, is an imaginary creation. All the phenomena of combustion and calcination are much more readily explained without phlogiston than with phlogiston. I understand that my ideas will not be suddenly adopted. The human mind conforms to a certain manner of vision, and those who during a portion of their lives comprehend nature from a given point of view have difficulty in acquiring new ideas. In good time the opinions I have set forth will be confirmed or destroyed. In the interim, it is a great satisfaction for me to see that young, unprejudiced minds among those who are commencing to study science, such as mathematicians and physicists, who have a new sense of chemical truths, no longer believe in phlogiston as presented by Stahl, but regard the whole doctrine as scaffolding which is more embarrassing than it is useful for the continuance of the structure of the science of chemistry.

ATTITUDE OF OTHER SCIENTISTS

And the wonder of it all is that the great chemists of his time outside his own country persisted in their narrow point of view. Priestley and Cavendish refused to be converted. Scheele,[19] in 1783, wrote:

> Is it impossible to convince Lavoisier that his system will not find universal acceptance? The idea of nitric acid from nitrous air and pure air, of carbonic acid from carbon and pure air, of sulphuric acid from sulphur and pure air, of lactic acid from sugar and pure air!! Can one believe such things? Rather will I support the English.

Only Black, professor of chemistry at Edinburgh and the discoverer of "fixed air," saw the truth. Lavoisier wrote to Black on Nov. 13, 1790, a letter [20] composed six months after the reading of his last memoir to the Académie des sciences. He concluded the letter with the truest French courtesy:

> It is only right that you should be the first to be informed of progress in a field which you opened and in which we all regard ourselves as your disciples. We do the same kind of experiments, and I have the honor to communicate to you the results of our recent discoveries. I have the honor to remain, with respectful attachment, etc.

And to this Black replied in 1791:

> The numerous experiments which you have made on a large scale and which you have so well devised have been perused with so much care and with such scrupulous attention to details that nothing can be more satisfactory than the proofs you have obtained. The system which you have based on the facts is so intimately connected with them, is so simple and so intelligible, that it must become more and more generally approved and adopted by a great number of chemists who have long been accustomed to the old system. . . . Having for thirty years believed and taught the doctrine of phlogiston as it was understood before the discovery of your system, I for a long time felt inimical to the new system which represented as absurd that which I had hitherto regarded as sound doctrine; but this enmity which springs only from force of habit has gradually diminished, subdued by the clearness of your proofs and the soundness of your plan.

13. Oeuvres de Lavoisier, Paris **2**: 139, 1862.
14. Lavoisier: La respiration des animaux, Mém. d. l'Acad. d. sc., 1777, p. 185; Oeuvres de Lavoisier, Paris **2**: 174, 1862.
15. Lavoisier and La Place: Mém. de l'Acad. d. sc., 1780, p. 355; Oeuvres de Lavoisier, Paris **2**: 283, 1862.
16. Thorpe: Essays in Historical Chemistry, 1890, p. 170.
17. Oeuvres de Lavoisier, Paris **2**: 334, 1862.
18. Oeuvres de Lavoisier, Paris **2**: 623, 1862.
19. Scheele: Briefe, p. 364.
20. Richet: Rév. scient. **39**: 193, 1887.

In reading of the overthrow of the old doctrine of the fire principle phlogiston, one must feel a throb of the impending horror of the French Revolution when one considers the statements of Marat, written in 1791. Marat at one time had declared that a flame, when placed in a confined vessel, went out because the heat of the flame suddenly expanded the air, causing such a pressure on the flame that it was extinguished. Lavoisier refuted this doctrine. Marat, "l'ami du peuple," under the title "Modern Charlatans," published the following:

> Lavoisier, the putative father of all the discoveries that are noised about, having no ideas of his own, snatches at those of others; but having no ability to appreciate them, he quickly abandons them and changes his theories as he does his shoes.[21]

Certainly words of unqualified, contemporaneous disapproval!

Lavoisier's new system of salts and oxids led him to forecast the discovery of sodium and potassium, for in his "Elements of Chemistry"[22] he wrote: "It is quite possible that all the substances we call earths may be only metallic oxids irreducible by any hitherto known process." A eulogist of Lavoisier has likened this to the vision of Copernicus before Galileo's invention of the telescope.

LAVOISIER'S LATER WORK

Lavoisier had now progressed so that he was able to lay the fundamental basis of modern chemical physiology. Thus, in 1785, he stated that the discrepancy between the quantity of expired carbonic acid and inspired oxygen, which he had observed in 1780, was accounted for by the fact that a part of the absorbed oxygen was utilized to oxidize hydrogen in the lungs. This oxidation would produce additional heat and account for the discrepancy between the heat directly measured from a guinea-pig and the heat calculated as being derivable from the oxidation of carbon by oxygen. It is interesting to recall that eighty years later, in 1860, Bischoff and Voit[23] still calculated the heat value of the metabolism from the heat which would be produced in burning the carbon and hydrogen elements of the metabolism.

Respiration experiments on a human being constituted the final contribution in the culmination of this great career. This work is presented by Seguin and Lavoisier[24] in the Mémoires of the Académie des sciences during the year 1789. In this paper the authors remark:

> This analogy between combustion and respiration did not escape the attention of the poets and philosophers of antiquity, of which they were the interpreters and spokesmen. Fire taken from the heavens, this flame of Prometheus, not only represents an idea that is ingenious and poetical, but it is a true picture of the operations of Nature on behalf of animals who respire; one can say with the ancients that the fire is lighted the moment a baby takes its first respiration, and is not extinguished until its death.

Before giving the details of the experiments on man, the authors state that a guinea-pig respired in pure oxygen and in a mixture of oxygen and hydrogen gas just as it did in ordinary air; respiration, circulation and the intensity of combustion were uninfluenced. Nitrogen had nothing to do with respiration.

In the experiments on man Seguin himself was the subject. The results are given in the accompanying table.

Here are the basic facts regarding metabolism. The basal metabolism was increased 10 per cent. after exposure to cold; 50 per cent. after taking food; 200 per cent. by exercise, and 300 per cent. on combining the influences of food and exercise. We now know more details and we may also calculate that Lavoisier's determination of 24 liters of oxygen absorbed per hour in this first historic experiment on the basal metabolism was 25 per cent. too high. As for the experimental plan, it is as modern as the work of today, and yet it was executed 140 years ago by the first man who really understood the significance of oxygen. It is only in the last decade that the summation of the individual stimuli caused by food and muscular work and noted by Lavoisier has been verified. Lavoisier also observed a constant relation between the quantity of oxygen consumed and the rate of the pulse multiplied by the number of respirations.[25]

RESULTS OF EXPERIMENTS ON MAN

Condition	Environmental Temperature, Degrees	Oxygen Absorbed per Hour
1. Without food	26	1,210 pouces de France
2. Without food	12	1,344
3. With food		1,800-1,900
4. Work (9,195 foot pounds) without food		3,200
5. Work (9,750 foot pounds) with food		4,600

How Lavoisier achieved these remarkable results is not known, for the times in which he lived became too troubled to allow further work in pure science. We find, however, the following statement in the original memoir:

> It would have been impossible to accomplish these exact experiments upon respiration before the introduction of a simple, easy and rapid method of gas analysis. This service M. Seguin has rendered to chemistry.

If one turns to the report of Seguin,[26] one finds that he states that in his work with Lavoisier he used eudiometers from 8 to 10 inches high and an inch in diameter in order to determine the "vital air" or oxygen in the respired air. The tube was first filled with mercury and inverted over mercury, a little of the gas to be analyzed was introduced, and then a bit of phosphorus which was later ignited by bringing a burning ember in the vicinity of the glass. The rest of the air to be analyzed was gradually admitted, and when the tube cooled, the volume of the air remaining could be measured. The loss in volume represented the quantity of oxygen absorbed. Carbon dioxid could then be absorbed by potash. Seguin stated that the older method, as originally introduced by Priestley, had twenty sources of error, but that his method merited attention on account of the very great exactitude with which he could determine the gases which are contained in respired air.

He furthermore truly stated that:

> If we enter into a room containing a large number of people we immediately smell a strong, suffocating odor; but if we use eudiometers to analyze this foul air and compare it with ordinary atmospheric air we find hardly any difference in the proportions of gases which are contained in them.

21. Grimaux: Lavoisier, 1896, p. 207.
22. Lavoisier: Elements of Chemistry, Philadelphia, 1799, p. 218.
23. Bischoff and Voit: Die Gesetze der Ernährung des Fleischfressers, Leipzig, 1860, p. 43.
24. Oeuvres de Lavoisier: Paris **2**: 688, 1862.
25. Letter to Black: Rev. scient. **39**: 193, 1887.
26. Seguin: Ann. de chem. **9**: 293, 1791.

After Lavoisier's death, Madame Lavoisier drew from memory the apparatus used by her husband. There are two pictures, quite dissimilar. Good reproductions are to be found in Grimaux's "Lavoisier." In both pictures Seguin sits naked in a chair, breathing through a mask into a series of globes or bell jars. In both pictures Madame Lavoisier is shown seated at a table, taking notes of the experiment. In both pictures the pulse is being counted. In one experiment a weight is placed on Seguin's instep. The arrangement of the apparatus is quite different in the two pictures. In the experiment showing Seguin at work it seems as though valves were indicated through which inspired air was received from the atmosphere while the expired air was driven through a tube into a bell jar under water. Nysten,[27] working in Paris, in 1811, described the method by which he caused tuberculous and other patients to respire through valves into a previously collapsed bag for half a minute, and then analyzed the expired air by a method similar to that of Seguin.

These are the known historical facts about the apparatus used in the first respiration experiments on man; but the exact details of the method by which results were established and which still are the basis of metabolism studies are unknown.

In contemplating his results, Lavoisier said:

> This kind of observation suggests a comparison of forces concerning which no other report exists. One can learn, for example, how many pounds of weight-lifting correspond to the effort of one who reads aloud or of a musician who plays a musical instrument. One might even value in mechanistic terms the work of a philosopher who thinks, the man of letters who writes, the musician who composes. These factors, which have been considered purely moral, have something of the physical and material which this report allows us to compare with the activities of a man who labors with his hands. It is not without justice that the French language has united under the common expression *work* the effort of the mind with that of the body, the work at the desk with the work at the shop. . . .
>
> Thus far we have considered respiration only as a consumption of air, the same kind for the rich as the poor, for air belongs equally to all and costs nothing. The laborer who works enjoys indeed in great measure this gift of Nature. But now that experiment has taught us that respiration is a true process of combustion which every instant consumes a portion of an individual, that this combustion is greater when the circulation and respiration are accelerated and is augmented in proportion to the activity of the individual life, a host of moral considerations suggest themselves from these determinations of physical science.
>
> What fatality ordains that a poor man, who works with his arms and who is forced to employ for his subsistence all the power given him by Nature, consumes more of himself than does an idler, while the latter has less need of repair? Why the shocking contrast of a rich man enjoying in abundance that which is not physically necessary for him and which is apparently destined for the laboring man? Let us take care, however, not to calumniate Nature and accuse her of faults undoubtedly a part of our social institutions and perhaps inseparable from them. Let us be content to bless the philosophy and humanity which unite to promote wise institutions which tend to bring about equality of fortune, to increase the price of labor, to assure to it just recompense, to offer to all classes of society and especially to the poor more pleasures and greater happiness. Let us trust, however, that the enthusiasm and exaggeration which so readily seize men united in large assemblies, that the human passions which sway the multitude, often against their own interest, and sweep the sage and the philosopher like other men into their whirlpool, do not reverse an outlook with such beautiful vistas and do not destroy the hope of the country. . . .

27 Nysten: Arch. f. d. Physiol., Berlin **3**: 286, 1817.

> We end this memoir with a consoling reflection. To merit well of humanity and to pay tribute to one's country it is not necessary to take part in brilliant public functions that have to do with the organization and regeneration of empires. The naturalist may also perform patriotic functions in the silence of his laboratory and at his desk; he can hope through his labors to diminish the mass of ills which afflict the human race or to increase its happiness and pleasure; and should he by some new methods which he has opened up prolong the average life of men by years or even by days, he can also aspire to the glorious title of benefactor of humanity.

These are words written by the greatest scientist of his day under the spell of the French Revolution. They are words of an educated, cultivated man of middle age, spoken in the Académie des sciences in the year of the fall of the Bastile and at a time when Edmund Burke from the other side of the Channel said: "In the groves of their Academy at the end of every vista you see nothing but the gallows."

And in 1790, a year later, Lavoisier [28] concluded his last scientific communication to the Académie with these words:

> Up to the present time we have learned only to conjecture as to the cause of a great number of diseases and as to the means of their cure. Before hazarding a theory we propose to multiply our observations, to investigate the phenomena of digestion and to analyze the blood both in health and disease. We will draw upon medical records and the light and experience of learned physicians who are our contemporaries, and it will be only when we are thus completely armed that we will dare to attack a revered and antique colossus of prejudice and of error.

No person of understanding can escape a thrill at this vision of modern medicine expressed by him who had overthrown phlogiston, discovered the composition of the air and its relation to combustion and to life, and who had created calorimetry and revolutionized the whole of chemical thought.

True to his enthusiasm, we find him drawing up the conditions for an international prize of 5,000 livres offered by the Académie des sciences in 1792 to the author of the best experimental treatise on the liver and the bile.[29]

OTHER ACTIVITIES OF LAVOISIER AND HIS DEATH

Lavoisier's life outside his laboratory had been that of a public official, a tax gatherer, and he had also been associated with the national manufacture of gunpowder, the quality of which he had greatly improved. He purchased a large landed estate and made experiments in scientific agriculture, doubling the wheat crop, quintupling the number of beasts on the land, and earning thereby the enduring gratitude of the peasants.

However, as stated before, he had incurred the bitter hatred of Marat, and he was a tax gatherer. In November, 1793, he was arrested in his laboratory at the Arsenal, on which he had spent a large portion of his fortune. A little while before, in August of the same year, the Académie des sciences had been closed as inimicable to the welfare of the state. This institution had been established in 1666 by Louis XIV who, after the peace of the Pyrenees, in the fulness of his power, felt that his kingdom needed nothing further than to be fortified by science, industry and art, and he intrusted his minister Colbert to carry out his desires.[30] But le amis du peuple are notoriously suspicious of the "intelligentzia," and the Académie was abolished.

28. Oeuvres de Lavoisier, Paris **2**: 704, 1862.
29. Oeuvres de Lavoisier, Paris **6**: 33, 1862.
30. Oeuvres de Lavoisier, Paris **4**: 557, 1862.

Just prior to his execution, Lavoisier wrote to a friend:

> I have had a sufficiently long career, always a very happy one, and I believe that my memory will be thought of with some regret and perhaps as having something of glory. What more could I desire? The circumstances which surround me would probably lead to an uncomfortable old age. . . . It is certainly true that all the social virtues, important services to the country, a useful career employed in promoting art and human knowledge, have not sufficed to save me from a sinister end or to prevent me from perishing as a criminal.

One of the charges against Lavoisier was that he had allowed the collection of taxes on the water contained in tobacco. On May 8, 1794, at the age of 50 years, he was tried and found guilty. Twenty-eight fermiers-généraux were executed in the Place de la Republique at the same time. He witnessed the execution of his father-in-law, Paulze, who was fourth on the list, and he was the fifth upon whom the ax of the guillotine fell.

Such was the Terror.

His friend Lagrange whispered that night to an intimate, "It took but an instant to cut off his head; a hundred years will not suffice to produce one like it!"

Writing a hundred years later, Berthelot [31] exclaimed:

> It is our right to admire the positive work which he accomplished. The universal judgment of the civilized world increasingly reveres his establishment of chemistry, one of the fundamental sciences, upon a fixed and definite basis. There is no grander accomplishment in the history of civilization, and hence the name of Lavoisier will live forever in the memory of humanity.

It is interesting to consider the differences in the lives of the men concerned in the great discoveries of the last quarter of the eighteenth century. Priestley, an indigent clergyman; Cavendish, of whom it was said that he was the most wealthy of learned men and the most learned of the wealthy; Scheele, a poor Swedish apothecary; and Lavoisier, a man of affairs, a noble of high social position in receipt of huge personal revenues. What is it, then, that makes for greatness in science? Would Lavoisier have accomplished more had he been on a "full-time" basis with a restricted income? It is a question of individual opinion, but to most people it would appear that scientific greatness depends primarily on the quality of the intellectual protoplasm of the brain, on the advantages offered to the functioning of that brain, and on the possession of a good conscience. These factors and not a coerced limitation of income are the driving forces toward the revelation of scientific truth.

FRENCH SCIENCE SINCE THE TIME OF LAVOISIER

Let us pass from the Paris in which Lavoisier was executed to the Paris which Liebig visited about a quarter of a century later. In the interim, Napoleon had come and gone. Berthollet, an associate of Lavoisier, had taught Napoleon chemistry. Berthollet and Monge, the mathematician, had organized a company of 100 scientists to accompany Napoleon to Egypt. Pasteur,[32] in looking into certain records, found that after Waterloo Napoleon, conversing with Monge at the Elysée, said: "Condemned now no longer to command armies, I see only Science with which to occupy my mind and my soul."

In the year 1823, Berzelius lived in Sweden, Davy in England, Volta in Italy; but in Paris lived La Place, Berthollet, Gay Lussac, Thénard, Cuvier, Ampère and Magendie. Thorpe,[33] today president of the British Association for the Advancement of Science, writes:

> That constellation has set—
> The world in vain
> Must hope to look upon their like again.

Into this circle both Liebig and Dumas were introduced by Alexander von Humboldt. Liebig, dedicating a French edition of one of his books to Thénard, a former master, thus expresses his appreciation:

> To Monsieur le Baron Thénard,
> Member of the Académie des sciences:
> Monsieur:
>
> In 1823, when you presided over the Académie des sciences, a young foreign student came to you and begged you to advise him concerning the fulminates which he was then investigating.
>
> Attracted to Paris by the immense reputation of those celebrated masters whose glorious researches established the foundations of the sciences and elevated them into an admirable edifice, he had no other introduction to you except his love of study and his fixed desire to profit from your teachings.
>
> You bestowed on him a most encouraging and flattering welcome, you directed his first researches, and through your influence he had the honor to communicate them to the Académie.
>
> It was the session of the 28th of July which decided his future and opened a career in which for seventeen years he has labored to justify your benevolent patronage.
>
> If his labors have been useful, it is to you that science is indebted for them, and he feels obliged to express publicly to you his ineffaceable sentiments of gratitude, esteem and veneration.[34] JUSTUS LIEBIG.
>
> Giessen, 1 January, 1841.

This was also the day of the French clinician Pierre Charles Alexander Louis, whose American pupils included Oliver Wendell Holmes, Gerhard, the Shattucks and the Jacksons.

In the following years the brilliant Dumas, singlehanded in France, was continually entering the lists against his more methodical contemporaries, Liebig, Wöhler and Berzelius.

At the time Liebig and Dumas began their scientific careers in Paris, Claude Bernard was a youth of 10 and Pasteur had been born the year before. Later, when Bernard was at the height of his intellectual power, some one asked Dumas, "What do you think of this great physiologist?" To which Dumas replied, "He is not a great physiologist. He is Physiology itself."

Pasteur was a pupil of Dumas, and when the Académie des sciences in 1822 decided to confer a special medal on Pasteur, Dumas headed a chosen delegation and in his address to Pasteur said:

> My dear Pasteur, your life has known only success. The scientific method which you use in such a masterly manner owes you its greatest triumphs. The Ecole Normale is proud of your work. France ranks you amongst her glories.

And in reply Pasteur said:

> My dear Master, it is indeed forty years since I first had the happiness of knowing you and since you first taught me to love science.
>
> I was fresh from the country; after each of your classes I would leave the Sorbonne transported, often moved to tears. From that moment your talent as a professor, your immortal labors and your noble character have inspired me with an admiration which has grown with the maturity of my mind.

31. Berthelot: La révolution chimique, Paris, 1890. p. 207.
32. Vallery-Radot: The Life of Pasteur 1: 257, 1902.
33. Thorpe: Essays in Historical Chemistry, 1902, p. 328.
34. Dedication to French edition of "Chimie organique appliques á la physiologie végétale et a l'agriculture," Paris, Fortin, Masson & Cie, 1841.

In this fashion one can trace history from generation to generation, the influence of the individual master on the fruitful soil of a younger mind. The wonder working changes wrought by Pasteur have been thus expressed by Osler:

> At the middle of the last century we did not know much more of the actual causes of the great scourges of the race, the plagues, the fevers and the pestilences, than did the Greeks. Here comes in Pasteur's great work. Before him Egyptian darkness; with his advent a light that brightens more and more as the years give us ever fuller knowledge.

Hear this cry of Pasteur [35] which followed the defeat of France in 1870 concerning "the forgetfulness, disdain even, that France had had for great intellectual men, especially in the realm of exact science." He says:

> Whilst Germany was multiplying her universities, establishing between them the most salutary emulation, bestowing honors and consideration on the masters and the doctors, creating vast laboratories amply supplied with the most perfect instruments, France, enervated by revolutions, ever vainly seeking the best form of government, was giving but careless attention to her establishments for higher education.
>
> The cultivation of science in its highest expression is perhaps even more necessary to the moral condition of a nation than to its material prosperity.

Last summer in Paris, the illustrious president of the Physiological Congress of 1920, Charles Richet, in his opening address said: "Seek to understand things; their utility will appear later. First of all it is knowledge which matters." And he illustrated this by citing the investigations of Claude Bernard on the glycogenic function of the liver, and the investigations of Portier and himself on the subject of anaphylaxis which they carried on with poisons of sea anemones injected into birds while they were sailing through tropical waters on the yacht of Prince Albert of Monaco.

It is well for us to learn lessons from the great masters of the past. Carl Voit, in 1890, said to me: "Die Franzosen sind ungeheur begabt, aber die jetztige traurige politische Verhältnisse drücken sie nieder" (The French are greatly gifted, but the present sad political conditions depress them). If we can only learn what the conditions are for the production of scientific men and provide such conditions, the world will gain hugely. A well-known British scientist said to me during the war:

> The Greeks had no classical education, but they had the two essentials of true education: first, the ability to express themselves correctly in words, and second, to appreciate their own relation to their surroundings, which latter is science.

It is in this sense that Lavoisier and Pasteur brought understanding into the minds of men, and this makes it a rare honor and a privilege to speak of them in the first Pasteur Lecture.

35. Vallery-Radot: Life of Pasteur **1**: 256, 1902.

To Lighten the Burdens of Illegitimacy.—A bill to be presented before the House of Commons by the national council for the unmarried mother and her child has this as its chief provisions: Where paternity is admitted, the father's name as well as the mother's must be registered; when paternity is admitted prior to birth, the father must contribute toward the expenses of the birth; payments for the maintenance of the child must be made to a collecting officer, not to the mother; the state will provide for the child until the age of 16 if the mother is unable to do it; the mother is not to be liable for the support of the child if she has not the means, and the child is to be a ward of the children's court of the area in which it lives.

INVOLVEMENT OF NERVOUS SYSTEM DURING PRIMARY STAGE OF SYPHILIS

CONTINUED STUDY *

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In 1912, Wechselmann [1] published a report of a series of cases calling attention to the involvement of the nervous system in what he termed the "preroseolar period" of syphilis. He reported at this time six cases of primary syphilis in which there were positive findings in the cerebrospinal fluid. In three of these, subjective symptoms referable to the nervous system were present. Wechselmann believes that in the primary period, or what he terms the "preroseolar period," the lymph spaces of the nervous system become the site of syphilitic infection and may cause deviations from the normal in the spinal fluid.

Writing from this clinic, Wile and Stokes,[2] in 1915, recorded the incidence of cerebrospinal syphilis in six cases of primary syphilis, corroborating the results of Wechselmann. Not only were the patients carefully studied from the standpoint of the spinal fluid, but with the assistance of competent specialists, they were all given routine neurologic, ophthalmic and otologic examinations. In one of their cases a cell count as high as 200 was recorded. Organic solids were increased in three out of four cases; the Wassermann test, however, was positive in only a single case in this series.

Since the publication of that paper we have had the opportunity of studying 221 cases of syphilis in which only the primary sore was present. The early period at which these cases were studied is indicated by the fact that of this number, 106 were still negative in the blood at the time of the examination. The results recorded below refer only to subjective and to biologic findings in the spinal fluid. Owing to the diminution of personnel incident to the war, these patients were not all subjected to careful special examinations, as were the original six.

From the standpoint of the lumbar puncture findings, the cases are of great interest as substantiating our early results. In many of the 221 cases studied, punctures were made at repeated intervals, and their course from mild involvement to complete restoration of the fluid on the one hand, and from mild involvement to definite involvement of the nervous system with the onset of symptoms on the other, could be noted. When, however, the findings were such as to warrant our belief that the nervous system was definitely involved by the spirochete, the patients were subjected not only to intensive intravenous medication, but also to intraspinal treatment. In virtually all cases in which a striking involvement was found at the first puncture and in which intensive treatment

* Studies and Contributions from the Department of Dermatology and Syphilology of the University of Michigan, service of Dr. U. J. Wile.

1. Wechselmann, W.: Deutsch. med. Wchnschr. **38**: 1446, 1912.
2. Wile, U. J., and Stokes, J. H.: Involvement of the Nervous System During the Primary Stage of Syphilis, J. A. M. A. **64**: 979 (March 20) 1915.

could be carried out on the lines indicated, marked improvement in spinal fluid findings was noted following the treatment.

Of the total number of cases studied (221), a deviation from arbitrary normal criteria (eight cells, negative Wassermann test, etc.) was found in sixty. Of this number, eleven cases showed merely an increase of one or two cells above the arbitrary normal of eight, and it may be justly contended that on such basis involvement cannot be said to be definite. In the remaining forty-nine cases, definite involvement of the nervous system could be properly assumed on pleocytosis, increased solids, and positive Wassermann test, although not all of these findings were present in each case. Increased albumin and globulin, virtually parallel, were found in twenty-five cases, pleocytosis in twelve, and positive Wassermann test in eight cases.

The colloidal gold test, together with the mastic test, was unfortunately not carried out in many of the cases. In three cases in which the colloidal gold test was carried out in the presence of active involvement as indicated by other criteria, the curve was identical in each case, being the ascending curve, fairly high in the middle. Of the entire number of cases examined, symptoms indicating central nervous involvement were present in only a single case, in which continuous headache, extending over a week's time, was found in association with positive findings throughout in the spinal fluid.

Our results may be thus summarized: Preroseolar involvement of the nervous system occurred with definite deviations from the normal in the spinal fluid in forty-nine cases out of 221 examined. That such involvement for the most part is in the nature of a transitory roseola of the meninges, without subsequent or permanent damage, is probable from the fact that the fluid in the majority of the cases rapidly was restored to normal under the influence of treatment and doubtless might have disappeared even without this, as does the cutaneous roseola.

It is perfectly apparent that involvement of the cerebrospinal axis could hardly occur at any time before actual systemic infection has taken place.

The positive findings, including complement fixation in the spinal fluid before changes occur in the blood, is not indicative of the fact that the infection has not yet become generalized. The significance of such findings is no doubt due to the greater delicacy of the laboratory criteria as applied to the spinal fluid as compared with the Wassermann test in the blood. In other words, the positive spinal fluid findings in a case not yet positive in the blood indicate generalization, and such findings cannot be accepted as clinical evidence of neurotropism. The foregoing finding thus substantiates for the human host the findings of Brown and Pearce [3] for generalization and dissemination in rabbits.

Most of the patients studied in this series, and particularly those in whom definite involvement was found, will be followed as far as is possible to determine whether there is any real relation between their precocious involvement and any later cerebrospinal accident. As has been noted before, intraspinal treatment was instituted in all of the more striking cases, and a prompt restoration to the normal was noted in all save one.

3. Brown, W. H., and Pearce, Louise: A Note on the Dissemination of Spirochaeta Pallida from the Primary Focus of Infection, Arch. Dermat. & Syph. **2**: 470 (Oct.) 1920.

CONCLUSIONS

Deviations from the normal in the spinal fluid of 221 cases of syphilis in which only the chancre was present was found in forty-nine cases, or 22 per cent. of the cases examined.

Increase in globulin and albumin virtually parallel was the most constant of the abnormal findings, occurring in twenty-five of the forty-nine cases. Pleocytosis was the next most frequent finding, occurring in twelve cases. The positive Wassermann test in the fluid occurred less frequently than the other two findings, being present in but eight cases.

Within certain limitations any single one of the above-mentioned deviations from the normal occurring alone must be regarded as evidence of early central nervous system involvement.

PRECAUTIONS NECESSARY IN THE SELECTION OF A DONOR FOR BLOOD TRANSFUSION *

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The observation was made first by Landsteiner [1] in 1900 that, when serum of certain individuals was mixed with cells of other individuals, clumping of the corpuscles, or iso-agglutination, occurred. Moss [2] and also Jansky [3] showed that people could be divided into four groups (Table 1) according to the way their blood interagglutinated. To explain these groups one must presuppose the presence of agglutinins in serums, and receptors for these agglutinins in cells.

TABLE 1.—AGGLUTINATION OF SERUMS OF THE FOUR GROUPS *

Corpuscles	Serums			
	Group I	Group II	Group III	Group IV
Group I	0	+	+	+
Group II	0	0	+	+
Group III	0	+	0	+
Group IV	0	0	0	0

* The plus sign indicates agglutination. The corpuscles of Group I are agglutinated by the serum of all other groups, but its serum has no agglutinating properties. The serums of Groups II and III mutually agglutinate each others' corpuscles. Group IV serum agglutinates all other corpuscles, while its own corpuscles are not agglutinated by any serum.

According to Moss there are three distinct agglutinins—one for each of the agglutinating serums, II, III and IV. Von Dungern and Hirschfeld,[4] however, assume the presence of but two—one in Group II serum, one in Group III, and both of these in Group IV. By a simple experiment I have been able to show that the latter explanation is correct:

Group IV serum agglutinates the cells of Groups I, II and III. By two or three additions of Group II cells to Group IV serum (in proportions of 0.15 c.c. of packed cells to 0.3 c.c. of serum) and incubation at 37 C. for twenty minutes between each addition, the Group IV serum has all agglutinins for Group II cells absorbed from it. If this were the only agglutinin that the serum contained (Moss theory), on addition of Group III cells no agglutination would occur. If, on the other hand, there are two distinct and separate agglutinins, agglu-

* Read before the New York County Medical Society, Oct. 25, 1920.

1. Landsteiner, K.: Centralbl. f. Bakteriol., Part I **27**: 357, 1900; Wien. klin. Wchnschr. **14**: 1132, 1901.
2. Moss, W. L.: Bull. Johns Hopkins Hosp. **21**: 63, 1910; **22**: 238, 1911.
3. Jansky, J.: Sborn. klin. **8**: 85, 1906-1907.
4. Von Dungern, E., and Hirschfeld, L.: Ztschr. f. Immunitätsforsch., Orig. **4**: 531, 1909-1910; **6**: 284, 1910; **8**: 526, 1910-1911.

tination will take place. Tests showed the latter theory to be the correct one. Furthermore, the same result was obtained when the initial adsorption was accomplished with Group III cells. If Group I cells are used for the adsorption, both agglutinins are simultaneously removed from Group IV serum and the resultant serum will not agglutinate any cells (Table 2).

The classification of individuals according to their iso-agglutinin reactions is of practical importance in relation to transfusion. It has rendered transfusion safe. This safety, coupled with simplification of technic, has established transfusion as an extremely important therapeutic measure. It has become customary to determine the "group" of the patient and then transfuse blood of a donor of the same group, provided his blood Wassermann test is negative and his hemoglobin and red cell count is normal. Although, in the majority of cases, the bloods of donor and patient belonging to the same group are compatible, nevertheless the number of exceptions are sufficiently great to warrant a different procedure and greater caution. In the course of performing many thousands of tests preliminary to transfusion, I have occasionally noted that although the donor and patient are of the same group, when the bloods are tested one against the other a small number of agglutinated clumps of red blood cells will be seen.[5]

TABLE 2.—RESULTS OF EXPERIMENT TO PROVE THE EXISTENCE OF TWO RATHER THAN THREE AGGLUTININS *

Corpuscles	Normal Group IV Serum	Group IV Serum after Adsorption of Agglutinins by Cells of		
		Group I	Group II	Group III
Group I	+	0	+	+
Group II	+	0	0	+
Group III	+	0	+	0
Group IV	0	0	0	0

* Showing that the agglutinin for Group II cells can be adsorbed from Group IV serum independently of that for Groups I and III cells. This establishes the existence of two rather than one agglutinin in Group IV serum. Furthermore, the cells of Group I contain receptors which are able simultaneously to adsorb both agglutinins from the serum.

Although ordinarily such donors are rejected, urgent need has forced me to transfuse patients in which this phenomonen occurred. In each case there was a sharp reaction—chill and fever—undoubtedly due to the occurrence of agglutination. One of these patients I subsequently transfused with a donor whose blood was perfectly compatible, as viewed by the microscope, and no reaction whatever occurred. The transfusions were performed by the method described by me[6] in this journal some years ago.[7] By this method, in a large series of cases, febrile reactions occurred only in about 10 per cent. and a chill in about 3 per cent. This indicates that the reactions following transfusions when there was a slight incompatibility, although donor and patient belonged to the same general group, were due to agglutination.

The recognized group of an individual is established by the presence of a "chief" or "major" agglutinin in his serum. Agglutination of cells by serums of the same group is probably due to a "para" or "minor" agglutinin, which causes a lesser degree of agglutination. The transfusion of such blood gives rise to clinical reactions. This disagreeable result, however, can be eliminated by testing the blood of every prospective donor directly against the patient's blood and by careful microscopic examination of the mixtures. This phenomonen of major and minor agglutination of red blood cells is comparable to that of group agglutination of bacteria. As is well known, a serum containing a high agglutinative power against typhoid bacteria may to a lesser degree also agglutinate bacteria belonging to the same group, such as paratyphoid or colon bacilli.

Another important but atypical result is encountered when performing the usual agglutination and hemolysis tests in infants. It has been shown often that the agglutinins for bacteria in normal nonimmunized animals are not present in new-born animals but are acquired later in life. So also with the agglutinins for red blood cells.

Halban[8] was first to note this difference between blood of a mother and that of her infant. He found that the agglutinating power of a mother's serum was far greater than that of blood taken from the umbilical cord of her infant. I have tested for the presence of agglutinins and receptors 119 children aged from less than 1 day to 4 years.[9] Of twenty-four infants under 1 month of age,[10] the serums of only three, or 13 per cent., contained agglutinins, whereas the average among adults is 97 per cent. The percentage of children whose serums contained agglutinins increased with their ages, but reached the adult average only between the second and fourth years of life (Table 3).

The same thing is true of cells. The great majority of children are born with cells possessing no receptors—they cannot be agglutinated by any serum. The cells of only about 25 per cent. of new-born infants can be agglutinated, whereas in adults the average is 50 per cent. The acquisition of receptors occurs at about 6 months, far earlier than the appearance of agglutinins in the serum. In some few cases, receptors antedate agglutinins. These results conform closely to those of Happ.[11]

Naturally, if the full quota either of agglutinins or of receptors is wanting, the blood fails to conform perfectly to established adult groups. At about 4 years of age, all children probably have established their adult iso-agglutinin group. The acquisition of a full

5. Each time this phenomenon was observed, the same samples of serums of Groups II and III were used to determine the group of the patient, and all donors who were tested against this case. Certain donors were found habitually to give this reaction. Although their cells fell definitely into Groups II or III, their serum gave minor agglutinative reactions against cells of patients of the same group. The microscopic method was used in every case; in none was there any rouleaux formation.

6. The mechanical principle involved in the instrument used in this method is the establishment of two channels by means of which a record syringe is automatically connected alternately with a vein of the donor and then with one of the recipient. At the same time that the record syringe is connected with the donor for the aspiration of blood, a syringe with saline solution is connected with the recipient, and vice versa. It is this immediate and continued flushing with salt solution of that channel through which the blood is not passing that insures freedom from clotting. The technic is as follows: Alongside the instrument which has been fixed to a table, the arms of the patient and the donor are placed. The tubes leading from the instrument are connected to the cannulas after the latter have been inserted through the skin into the recipient's and donor's veins. A record syringe is then inserted into the instrument, and blood is aspirated. When the syringe is filled, the stopcock is turned and then the blood is injected. Simultaneously, saline solution is forced through the channel which is not being used for the aspiration or injection of blood. This procedure is continued until the desired amount is transfused. In order to prevent clotting, a stream of ether is played on the barrel of the record syringe while it is being filled with and emptied of blood. In this way only one record syringe is required, regardless of the amount transfused.

7. Unger, L. J.: A New Method of Syringe Transfusion, J. A. M. A. **64**: 582 (Feb. 13) 1915; Recent Simplifications of the Syringe Method of Transfusion, ibid. **65**: 1029 (Sept. 18) 1915; Transfusion of Unmodified Blood, An Analysis of One Hundred and Sixty-Five Cases, ibid. **69**: 2159 (Dec. 29) 1917. The Therapeutic Aspect of Blood Transfusion, ibid. **73**: 815 (Sept. 13) 1919.

8. Halban, J.: Wien. klin. Wchnschr. **13**: 545, 1900. Halban, J., and Landsteiner, K.: München. med. Wchnschr. **49**: 473, 1902.

9. The serum of each child was tested microscopically against adult cells of Groups I, II, III and IV, and the cells of the child against adult serum of Groups I, II, III and IV.

10. The age of twenty-one of these ranged from less than 1 day to 11 days. These children were on the obstetric service of Dr. George L. Brodhead at Harlem Hospital.

11. Happ, W. M.: J. Exper. Med. **31**: 313 (March) 1920.

quota either of agglutinins or of receptors may occur gradually. Serum may contain agglutinins for cells of Groups I and III, and later acquire them for Group II cells. By this addition the child apparently has changed its group. The oldest child tested with no agglutinins whatsoever in its serum was 2 years and 11 months of age. The youngest child with its full quota of agglutinins and receptors was 3 days old.

From the practical standpoint, these facts render it comparatively simple to find a donor compatible for transfusing an infant. The blood cells of most children under 6 months of age cannot be agglutinated, and their serum cannot agglutinate a donor's cells. For such children, any donor, regardless of group, is compatible. I have performed transfusions many times in such cases without any untoward results. It is therefore superfluous to attempt a grouping of an infant's blood. One should rather test the blood directly against that of the prospective donor.

The peculiarities of infant's blood probably explain the frequent statement that any mother may be used as a donor for her new-born infant. After the bloods of twenty-one mothers and their respective children were grouped and one tested against the other, it was clear that such a statement is erroneous. It was found that seven, or 33 per cent., were of different groups; of these seven, four were compatible in spite of this difference. Had the mothers of the three others been used as donors for their infants, the results might have been disastrous. It is therefore necessary to test the blood preliminary to transfusion, even though the mother should act as donor. It was found also that children of the same family often belong to different groups. Among six sisters of one family, all four groups were represented, and two of these women differed in grouping from their children.

TABLE 3.—INFLUENCE OF AGE ON APPEARANCE OF AGGLUTININS IN SERUM AND RECEPTORS IN CELLS *

Age	Number of Children Tested	Serum Contained Agglutinins		Corpuscles Agglutinable	
		Number	Per Cent.	Number	Per Cent.
From birth to 1 mo.	24	3	13	6	25
From 1 mo. to 6 mos.	16	4	25	8	50
From 6 mos. to 1 yr.	18	9	50	9	50
From 1 yr. to 1½ yrs.	18	12	67	10	55
From 1½ yrs. to 2 yrs.	11	7	66	7	66
From 2 yrs. to 4 yrs.	32	30	94	21	66
Total	119				

* The normal adult percentage for agglutinins in serum is reached between the second and the fourth year of life, while that for receptors is reached at six months.

It is believed commonly that the cells of Group IV cannot be agglutinated by any serum. A person of this group is accepted as a "universal donor." By this term is meant a donor who in an emergency may furnish blood to any patient regardless of group, on the theory that danger arises only when the donor's cells are agglutinated and that agglutination of the patient's cells may be disregarded. In nine patients, however, serum was found to agglutinate cells of certain Group IV donors. Six of these patients belonged to Group IV, one to Group II, and in two others unfortunately the type was not determined. A result of this kind demonstrates the inadequacy of "typing" merely the patient, and the necessity of testing the blood of donor and patient, one against the other. Five patients showed the phenomenon of auto-agglutination—that is, the cells of the patient were agglutinated by his own serum; the four others apparently contained "minor" agglutinins for Group IV cells. Blood containing auto-agglutinins will clump its own cells when its temperature is lowered, the clumping disappearing when the temperature is raised to 37 C. Unless one is aware of this phenomenon, a patient's blood may be classified erroneously in Group I. Special care must be taken to determine the proper grouping of such bloods; the cells should be washed repeatedly in warm saline solution until a suspension shows no auto-agglutination when placed in the icebox. For patients whose blood contains "minor" agglutinins for Group IV cells, search must be made until a proper donor is found.

Certain serums will produce a rouleaux formation of the patient's cells. This reaction is quite different from agglutination, and often can be eliminated by using a weaker emulsion of cells or by diluting the serum. The rouleaux-forming substance in serum can act on cells of any of the groups. I have transfused several patients whose serums contained this substance with apparently no ill effect—no untoward reaction.

SUMMARY

1. All individuals may be grouped broadly into four main groups. These groups are established by the presence of two "chief" agglutinins in the serums and receptors for these agglutinins in the cells. Besides "chief" agglutinins, "minor" agglutinins have been demonstrated.

2. Ninety-seven per cent. of adults have agglutinins in their serums. They are, however, present in 13 per cent. of new-born infants. Only 25 per cent. of new-born infants have cells that can be agglutinated, as compared to 50 per cent. among adults. The full quota of agglutinins and receptors is acquired between the third and fourth years of life.

3. Incompatibility between the blood of a mother and her new-born infant occasionally occurs. It is unsafe, therefore, to omit testing the blood preliminary to transfusion, even though the mother should act as donor.

4. It is not advisable indiscriminately to use the so-called "universal donor," as severe reactions have been observed following the use of donors of Group IV for patients of other groups.

5. The rouleaux-formation substance, even though acting on the donor's cells, is apparently harmless, and no untoward results have been seen following such transfusions.

6. It is unsafe to perform a transfusion, relying simply on the fact that donor and patient are of the same group. Preliminary to transfusion, the blood of every patient should be grouped and then tested directly against that of the prospective donor.

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Medical Jurisprudence of Venezuela. — "Jurisprudencia Médica Venezolana" is the title of a book by G. T. Villegas-Pulido published at Caracas, which has been deservedly endorsed by the National Academy of Medicine of Venezuela. It includes nineteen chapters on legal medicine, nine chapters on law in relation to the practice of pharmacy, copies of Venezuelan laws, relating to the practice of medicine and pharmacy. As can be expected in a Latin American book, French works have been chiefly consulted in its preparation, although some references may be found to American legislation. Dr. Razetti, the secretary of the Venezuelan Academy of Medicine, has written an interesting introduction, taking up historically some of the bases on which medical practice and ethics rest.

A STUDY OF THE SPINAL FLUID IN FIFTY-TWO CASES OF CONGENITAL SYPHILIS *

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With a steady improvement in the technic of biologic tests at our disposal, and the increasing appreciation of spinal puncture, numerous and valuable contributions to our knowledge of syphilis of the central nervous system have been made during the last few years. Probably because of the possible difficulties to be encountered in this procedure with infantile cases, these studies, for the most part, have dealt with syphilis in the acquired form. In view of this fact, and as part of a preceding series of similar studies from this clinic, the present analysis of spinal fluid findings in cases of hereditary syphilis was undertaken.

In spite of the preponderance of similar studies having to do with neurosyphilis in the acquired form, the more recent literature contains occasional references to the inherited form of the disease. For the most part, moreover, these contributions have pointed out the types of possible accidents that may occur with involvement of the central nervous system in hereditary syphilis. Gaucher,[1] Barbier and Gassier,[2] Bresler [3] and Hubner [4] each have contributed exhaustive studies to this particular phase of the question. As a result of their studies, these authors have emphasized certain types of hydrocephalus, certain meningitides, including meningo-arterial involvement, gummas with localizing symptoms, and convulsions at different ages and of various types, as possible accidents of important frequency. Further, the question has been considered from the standpoint of certain other neurologic manifestations, attention having been called by Camp [5] to what is an apparent increase in the incidence of this type of involvement, and the growing importance of inherited syphilis as an etiologic factor in the hereditary degenerations, including certain of the muscular dystrophies. Notwithstanding valuable general considerations of the subject as mentioned above, routine examination of the spinal fluid of patients with hereditary syphilis has apparently been undertaken in surprisingly few instances.

Jeans [6] has reported the results of such a study carried out in 214 cases. Combining lumbar puncture with a careful clinical examination, approximately a third of Jeans' cases show definite involvement. Such involvement varied from entirely asymptomatic cases with abnormalities in the spinal fluid alone to those cases with permanent changes presenting various palsies, hemiplegias, and certain types of mental deterioration. In a similar study, With [7] has reported an equally high percentage of involvement, although his investigations were confined to a group of only twenty-six cases. Finally, Ravaut [8] has reported the results of such an investigation in twenty-eight cases of inherited syphilis, the ages of the patients ranging from 10 days to 13 months. Ravaut emphasizes the interesting parallelism between cutaneous and mucous membrane lesions and spinal fluid changes, and suggests as especially important the frequency with which his cases presented varying degrees of hydrocephalus, hypertension of the fontanels, convulsive attacks, and dilatation of the superficial veins of the scalp. An examination of the chart of these cases, however, reveals the fact that certain of the cases presenting convulsions and hydrocephalus gave an entirely negative reaction in the spinal fluid. This fact, it is believed, rather lends weight to Hubner's suggestion that we should hesitate before reaching a decision as to whether the syphilitic infection is incidental or etiologic in its relation to any group of symptoms presented by a given case.

In the present study of fifty-two cases, an unquestionable diagnosis has been established by the presence of the accepted symptoms and stigmas of prenatal infection, the presence of definitely positive laboratory tests, or both. The findings reported are those as found in the routine puncture, without reference to any particular indications or group of presenting symptoms. In every case the patient has remained sufficiently long under care to substantiate any doubtful findings, and to observe any developing symptoms or the recurrence of former ones not demonstrable at the time of the first examination. The ages vary from 3 weeks to 21 years. Most of the patients have been examined by special departments for ocular abnormalities, auditory disturbances, and clinical neurologic findings.

Of the total of fifty-two cases, fifteen, or 28.8 per cent., presented some deviation from the normal, according to the accepted criteria of spinal fluid findings. The cases showing these abnormalities may be roughly divided into two groups, according to the extent or severity of involvement. The first group, representing those cases in which only slight changes had taken place up to the time of puncture, includes four cases. In three of these, the Wassermann reaction on the cerebrospinal fluid was one plus; in two, two plus. In addition, however, the cell count revealed a slight pleocytosis. The highest cell count in this group was 15, obviously not of particular significance, except that it was accompanied by an increase in the solids of a corresponding degree. In this group, early central nervous system impairment was clinically substantiated by the presence of chorioretinitis, increased reflexes, and in one case, severe nerve deafness. Apparently these were cases of transitory involvement. At least, they are comparable to similar changes found by Wile and Stokes [9] in acquired cases, for which these authors have suggested as a plausible explanation the existence of a nervous system lesion similar to the fading roseola of the skin.

The second group represents the more severe grades of involvement. This group includes eleven cases, each of which gave a definitely positive Wassermann

* Studies and Contributions of the Department of Dermatology and Syphilology of the University of Michigan, Service of Dr. Udo J. Wile.

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2. Barbier and Gassier: Quelques faits d'hérédosyphilis du système nerveux, Bull. Soc. de pédiat. de Paris **14**: 9, 1912.
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4. Hubner: Ueber congenitale Lues, Arch. f. Psychiat. **57**: 169, 1917.
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8. Ravaut, P.: Le liquide céphale-rachidien des hérédosyphilitiques, Ann. de dermat. et syph. **8**: 81, 1907.
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reaction. In these apparently more severe types, a striking parallelism between strongly positive Wassermann reactions and definite albumin and globulin increase is noted with regularity. This observation entirely confirms that noted in the preceding similar studies in acquired cases, and is perhaps suggestive of the relative value of certain findings in our routine diagnostic procedures. There is, however, an equally striking lack of parallelism between the degree of pleocytosis and the other strongly positive findings. The cell count in these cases varied from 6 to 159, in spite of the fact that the remaining tests were equally positive in all.

It is also interesting to note here that in certain instances in which other findings, including Wassermann tests, were negative throughout, there were varying degrees of pleocytosis, in one case the cell count being 68. Grulee has called attention to this fact before and has made the plausible suggestion that febrile disturbances, particularly the acute exanthems, in infancy and childhood, may result in more or less temporary fluctuations in what we are accustomed to consider the normal cellular content. French investigators have made like suggestions, and the occurrence of similar discrepancies in the present study leads us to believe that it is a finding of sufficient frequency to merit future consideration.

In addition to the interesting changes in the cerebrospinal fluid, the second group of cases, with only one or two exceptions, presented clinical symptoms of considerable gravity. Four of the cases presented the typical clinical picture of juvenile general paresis, three of which, because of an apparent familial type of infection, seem worthy of brief description. The parents of these three patients were first seen, and in each the routine examination revealed a latent syphilitic infection. The father gave a definite history of infection acquired thirteen years previously, but to his knowledge had never developed further manifestations. At the time of consultation he presented a clinically inactive syphilis.

The mother was entirely unaware of her condition, gave a completely negative history, and presented only a general adenitis and a strongly positive blood serum. There had been three apparently normal pregnancies; the children were all living, their respective ages being 8, 4 and 2 years.

FINDINGS IN THREE CASES

CASE 1.—A boy, aged 8 years, was rather poorly nourished, undersized, and had a peculiar weazened appearance. He had never suffered any severe acute illness but had always been frail, easily exhausted, and unable to enjoy the usual activities of his age. The head was of unusual appearance, owing to marked frontal and parietal bosses. There was a pupillary inequality, and a sluggish reaction to light. The mucous membranes were without any abnormality, and there was no marked general adenitis. There were pronounced bony stigmas involving, beside the skull, the tibiae, the scapulae and the ulnae. The Wassermann reaction was strongly positive. The patient received moderately intensive arsenical and mercurial therapy, with encouraging improvement in his general condition, and he was discharged from the service with instructions to return for further care after an interval of rest. The patient was not heard from for a year and nine months, when he reentered the service. His examination revealed the physical findings of his first visit, except that the pupillary abnormalities were much more marked. In addition, he had definitely deteriorated mentally. His speech showed defects not present before, and he frequently repeated meaningless phrases and groups of words during questioning. He often laughed and cried during an ordinary conversation, and seemed to have completely lost all emotional control. He received a second course of treatment, during which he symptomatically improved to such an extent that he was again given over to the care of his local physician. Two months later we were informed of his death following a convulsive attack lasting only a few hours.

CASE 2.—A girl, aged 4 years, was underweight at the time of birth, but was otherwise an apparently normal child. She contracted measles during the first year, which left her hyperirritable, but otherwise she showed the usual physical and mental development until 2½ years of age. At that time, six months previous to the time of her examination, she suddenly developed convulsive attacks. These were characterized by local tremors, rigidity, and loss of consciousness lasting from a few minutes to two hours. They came at irregular intervals. With these attacks the patient gradually lost her ability to speak distinctly and coherently, developed the habit of eating mud, gravel, etc., and at times showed definite evidence of mental instability. The child was fairly well nourished and well developed. The head was decidedly megacephalic, owing to marked frontal and parietal bosses. The pupils were sluggish. The mucous membranes were clean. There were no changes in the long bones, and the viscera were not palpably involved. The deep reflexes were all exaggerated, and the gait was slightly ataxic. Throughout the examination the patient, from time to time, made inarticulate noises, and showed a definite speech defect and emotional instability. The laboratory tests were strongly positive. During her treatment the patient's general condition improved, and there was a sufficient remission in her mental symptoms to allow her discharge into the custody of her parents.

CASE 3.—A boy, aged 2 years, was well nourished, but slightly undersize. He had been an apparently normal baby, and up to the time of examination had had no serious illness. With the exception of suggestive deformities in the scapulae and tibiae, there were no clinical stigmas. The patient tolerated his treatment well, and at its completion was discharged with the usual instructions regarding future observation. At the time of entrance his blood Wassermann test was four plus positive. He was not heard from for two years, when he was brought to the service for reexamination. This, gave findings similar to those of the brother and sister, amply sufficient for a clinical diagnosis. The patient was taken elsewhere for treatment.

Examination of the spinal fluid in each of these cases entirely bore out the clinical diagnosis.

COMMENT

Examples similar to the foregoing are not entirely wanting in the literature, yet they are not of great frequency and are extremely suggestive in a consideration of the question of spirochete tropism.

The remainder of this group, presenting more severe involvement of the nervous system, includes seven cases. Of these, two were distinctly retarded mentally, and from their lack of response to treatment may be considered potential institutional patients. Four suffered only from pupillary and deep tendon reflex changes, and apparently made permanent response to treatment. The remaining patient was an infant presenting a severe cutaneous involvement, without other demonstrable changes.

CONCLUSIONS

1. This study of selective cases emphasizes the important frequency with which cerebrospinal involvement is associated with prenatal syphilis.

2. The importance of the routine lumbar puncture is again urged, not only because of its immediate value as a diagnostic procedure, but also on account of its influence on the ultimate prognosis in a given case.

For the privilege of presenting the foregoing material, and for courteous suggestions throughout its preparation, I am indebted to the kindness of Prof. Udo J. Wile.

THE WASSERMANN TEST AND ITS LIMITATIONS IN DIAGNOSIS AND TREATMENT *

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In spite of many publications that have described modifications of the original technic of the complement fixation test for syphilis, and in spite of the fact that these publications have more or less clearly indicated the limitations of the reaction, it is evident that these limitations are in many instances not yet clearly comprehended. The present paper has been written, not with the idea of adding further complications to the problem, but to present in concrete and statistical form our experiences in some 28,000 tests. Particularly interesting are our results in 1,200 cases of syphilis under observation for periods up to three years, and in a series of 148 cases under observation for five or more years. In all of these cases the serologic course of the disease has been followed at frequent intervals. The survey covers the period from 1912 to 1919, inclusive.

The numerous publications describing various changes in the original Wassermann technic deal mainly with three influencing factors: (*a*) the patient, (*b*) the collection of the specimen, and (*c*) alterations in technic.

As regards the patient, it has been pointed out repeatedly that the ingestion of even small amounts of alcohol within twenty-four hours of withdrawal of the blood may produce a false negative reaction. We shall not further elaborate on this point; it is a fact to be remembered even with the advent of prohibition. Fever may occasion a false positive; Herz has described this in connection with pneumonia, and we have observed it in other febrile conditions when during the height of the febrile period a positive reaction occurred, while a few days later the same individual in an afebrile state gave a negative reaction. There is a group of diseases (yaws, malaria, relapsing fever, yellow fever, tubercular leprosy, scarlet fever, trypanosomiasis and Vincent's angina) in which occasional nonspecific positive reactions are said to occur, but our experience includes too few of these to be of value.

As regards the influence of treatment, a period of at least eight weeks should elapse after treatment before a negative report is considered an indication that the disease is being overcome. Even then another test should be made after a short interval to confirm this negative result.

The second group of factors that may influence the reaction has to do with the collection of the specimen. All containers should be absolutely clean and dry, and the serum should be separated from the clot within twenty-four hours, even when the specimen is kept on ice. Failure to observe these precautions, particularly in warm weather, not infrequently results in reports of "anticomplementary serum." When these precautions have been observed and the specimen is still reported as anticomplementary, it has been our experience that most such specimens are subsequently shown to be positive.

A third group of factors has to do with the actual technic of the test. Although this aspect of the problem may not appeal to the clinician, nevertheless it is of such essential importance that the time spent in mastering the details is well worth while, even though the clinician may never expect to perform the actual test himself.

CAUSES OF CONFLICTING REPORTS

Antigen.—There are in general use three types of antigen: cholesterinized, acetone insoluble, and alcoholic; and these three types are usually extracted from either beef or guinea-pig heart. The delicacy of these reagents varies, the cholesterinized generally being the most sensitive, the acetone insoluble next, and the alcoholic least sensitive. Usually antigens made from beef heart are less sensitive than those made from guinea-pig heart. It is not uncommon to find a serum which is negative with an alcoholic antigen and four plus positive with a cholesterinized antigen, both tests having been performed at the same time on different portions of the same serum. In a series of 6,000 serums in which both antigens were used, we found this to occur ninety-eight times. It is easily conceivable that one laboratory using only the alcoholic antigen may report negative, while another using only the cholesterinized antigen may report positive on the same serum, and still both laboratories be certain of their results according to their individual technics. It is for this reason that we believe that a laboratory report should state the type of antigen used.

Fixation.—One of the steps in performing the reaction consists of allowing the antigen and antibodies present in the serum to fix themselves to the complement. This is known as fixation, and may be done either in the incubator or water bath at 37 C. for one hour, or in the icebox at from 4 to 10 C. for three or more hours. Icebox fixation has been shown by various workers to be more sensitive, thus giving more positives, than is fixation at higher temperature. Again, we are confronted with the possibility of a negative report from one worker using the water bath, and a positive report from another using the icebox. Each may be right according to his method; but unless the clinician knows which method has been used, the interpretation of the report may be incorrect. In a series of 1,800 tests in which both icebox and water-bath fixation were used on the same serums and with the same antigen, twelve instances occurred in which water-bath fixation gave a negative, and icebox fixation gave a four plus positive.

Natural Amboceptor.—It is well established that certain human serums contain a natural amboceptor against sheep's red blood cells in such amounts that, unless it is allowed for, false negatives will result if the usual dose of amboceptor from a rabbit is added. Here, again, one laboratory not allowing for the presence of natural amboceptor may report negative, while another laboratory in which this factor is controlled may report positive on the same specimen. In a series of 350 serums run in duplicate, one set tested for natural amboceptor, the other not, four instances occurred in which the natural amboceptor was present in amounts large enough to have altered a positive reac-

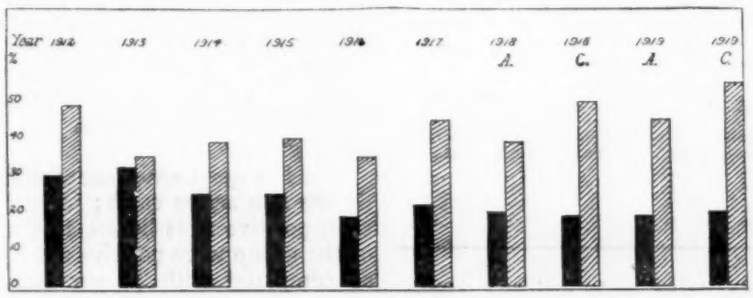
* From the Laboratory of the Lenox Hill Hospital.
* The serologic examinations considered in this report were made in the serologic department under the direction of Dr. Garbat. The clinical material is from the service of Dr. Sigmund Pollitzer and Dr. Leo Spiegel.

tion to a negative, unless the presence of the natural amboceptor had been allowed for.

The foregoing paragraphs briefly point out the causes which occasion different reports on the same specimen when sent to different laboratories. The larger proportion of the differences that thus arise are due to technical factors which, under present conditions, are apparently not convertible into a standardized technic for common use in all laboratories. It is essential, therefore, that the clinician should be advised of the technic employed, whether alcoholic, cholesterinized, or any modified antigen was used, whether natural amboceptor was present, and whether icebox or water-bath fixation was employed. Furthermore, we believe it to be the duty of the clinician to acquaint himself sufficiently with complement fixation technic so that he can properly interpret the laboratory reports. We believe that such cooperation between the laboratory and the clinician will lead to more satisfactory understanding of the results of the test.

ADDITIONAL DATA

Further data bearing on some of the points just discussed are given by a statistical study of our 27,956 complement fixation tests. The data are presented in chart form, and confirm the experience of other observers in several particulars. The cases have been grouped as A, those with negative history or no history obtainable, or no symptoms of syphilis demonstrable, and B, those with positive history or symptoms of syphilis. The results have been tabulated as either positive or negative, the usual gradations having been discarded. The cases in Group A were for the most part ward inmates, while those in Group B were for the most part from the outpatient department.



Percentage of positive Wassermann tests in Group A (solid black area) and Group B (shaded area). From 1912 to 1917, alcoholic antigen, icebox; *A*, alcoholic antigen, icebox; *C*, cholesterin antigen, icebox.

Since Wassermann tests were performed in approximately 95 per cent. of all ward cases as a routine procedure, irrespective of complaint or symptoms, it is of interest to note that the ward cases giving positive reactions varied from 18 to 24 per cent.

The comparatively low percentage of positive results in undoubted clinical cases of syphilis (though not necessarily cases with active lesions) is due to the fact that many of the tests were taken while the patients were under treatment and, in consequence, were temporarily or permanently negative. The percentage of positives in clinically active cases, as will be shown later, approximated 92.

For the years 1912 to 1917, inclusive, the technic used was that of alcoholic antigen and water-bath fixation. It will be noted that the percentage of positives varied from 18 to 33 in those of Group A, and from 33 to 54 in those of Group B. During the years 1918 and 1919 the technic was changed, both alcoholic and cholesterinized antigens being used, the fixation being in the icebox. With this alteration in technic the positive reactions in Group A showed little or no variation as between the two antigens; the cases in Group B, however, showed a larger percentage (from 10 to 12) of positive reactions with the cholesterinized than with the alcoholic antigen.

In the study of the 1,200 cases of clinically definite syphilis, two types of variation became evident which cannot be explained by any of the factors to which previous reference has been made. It is known that occasionally a case which is clinically an old syphilis may give a negative test. It is also well known that occasionally the negative serologic test changes to positive under the influence of treatment. This observation has prompted the use of what is termed the provocative test, a procedure which Pollitzer and Spiegel have shown to be valueless as a test of cure. Forty-six of the old syphilitics in our series gave negative tests on first examination; of these, thirteen became positive during or after treatment. The average medication given up to the first notation of a positive reaction in these cases was four doses of 0.5 gm. of arsphenamin and ten 0.1 gm. injections of mercuric salicylate.

Another type of unexplained fluctuation (through personal communication we have found that other laboratory workers have also encountered it) consists of sudden changes from negative to positive or vice versa with no relation whatever to treatment. In 3,165 tests on known syphilitics, these sudden changes occurred 108 times. Isolated occurrences of this type would, of course, at first be attributed to some error in technic or to a "mix-up" in specimens. The recurrence of the affair prompted checking of the work by submission of duplicate specimens to another laboratory. Our results were confirmed in thirty-eight of forty-two specimens. During the occurrence of these vacillations, the technic of the test was not altered. Changes of this type occurred with both water-bath and icebox fixation, and with both alcoholic and cholesterinized antigen. Table 1 gives the numerical data. We have no explanation to offer for their occurrence, except to point out that they are not due to technical errors. It is our impression that if specimens were taken frequently (for example, once a week) on a series of known syphilitics, such variations would probably be shown to be of rather frequent occurrence. Craig has also made the same suggestion.

TABLE 1.—OCCURRENCE OF UNEXPLAINED FLUCTUATIONS

	Times
Changes from positive to negative	69
Changes from negative to positive	39
Changes observed in specimens taken one week apart	24
Changes observed in specimens taken three weeks apart	56
Changes observed in specimens taken twelve weeks apart	28

An analysis of 148 cases of syphilis under observation for a period of at least five years, in which the serologic examinations have been correlated with treatment, furnishes still more interesting data. These cases have been divided into three groups: (*a*) abortive cases, diagnosis being made by the finding of spirochetes (dark field) in the initial lesion; (*b*) early cases, infection not more than one year old, and (*c*) late

cases, infection more than one year old. The last group was divided into active cases and asymptomatic cases. In the analysis, all positive serologic reports, regardless of degree, have been grouped under one heading.

Taking into consideration that this group consisted of outpatients, who are notoriously difficult to control and follow up and who in the vast majority of cases promptly disappear on the return of the first negative blood test, we believe they have been treated as intensively as possible. The procedure adopted in treating them may be thus outlined: From 1912 to 1916, inclusive, they received a series of six injections of arsphenamin given either weekly or biweekly. These injections were followed by a series of ten mercuric salicylate injections (from 1 to 2½ grains each), and these injections in turn were followed by a period of rest of from five to six weeks. A blood Wassermann test was then taken and noted, but the course of treatment and blood test were repeated every six weeks for the first two years after the patient reported for treatment, irrespective of the serologic report. Since 1917, the patients have been treated almost exclusively with arsphenamin, mercury being used only in cases with late manifestations. Since 1917, all cases of abortive and early syphilis were treated according to the intensive method advocated by Pollitzer (daily injections of arsphenamin for three days in the proportion of

TABLE 2.—SUMMARY OF CASES

Type of Case	Number	Percentage Serologically Cured	Average Total Medication Given			
			Cured		Not Cured	
			Mercury	Arsphenamin	Mercury	Arsphenamin
Abortive	3	100	14	7	..	..
Early	48	86	41	18	44	15
Late active	85	49	67	19	80	30
Late quiet	12	53	44	15	48	34

0.1 gm. for every 30 pounds of body weight). This intensive treatment is followed by a period of six weeks' rest and then repeated. These treatments are kept up for the first two years after the patient has come under observation, irrespective of the serologic report. In the third year, two courses of arsphenamin (four injections each) are given at weekly intervals.

In summarizing our cases we have arbitrarily adopted, as the standard for a serologic cure, a continuously negative Wassermann test and an absence of all signs of activity for a period of three years after the cessation of all treatment. It is possible that this standard is not sufficiently rigid, for we have observed in this series of 148 cases five patients in whom the Wassermann test again became positive after having been continuously negative for three years without treatment. Spinal puncture with an examination of the obtained fluid is unfortunately a procedure which cannot be performed with safety in the outpatient department; and though a large proportion of our supposedly cured patients have been admitted to the hospital in order to have this final examination made, the data are not sufficiently numerous to warrant analysis. This fact must be considered in a strict evaluation of the results obtained.

The summary of cases as shown in Table 2 is instructive in several ways. The abortive group is small and does not represent all of the cases of this type treated, but only those which we have succeeded in keeping under observation. None of these three patients ever had a positive blood.

Of the early cases, 92 per cent. gave positive reactions before receiving treatment. After being under treatment for three months, 8 per cent. were still positive; and at successive later intervals, in spite of treatment, the percentage of positives gradually increased until after two years' treatment 14 per cent. were positive. After the second year, further treatment did not result in any lowering of this percentage. These results would indicate either that there are probably several strains of spirochetes, some of which are resistant to treatment, or that the correct method of treatment is one that is intensive at the onset; for it is apparent that the first period of treatment is the most effective. This point is probably the correct one, as is shown by the comparison between the results obtained with abortive cases and early cases and a further comparison between the results obtained with early and late cases.

The late active cases gave 90 per cent. positive tests before treatment was received, and here again the powerful influence of the first period of treatment is indicated by the fact that while three months of treatment resulted in a reduction of the percentage of positives to 21, in spite of continuous treatment according to the scheme previously given, there was a gradual increase in the percentage of positives until, after three years' treatment, 51 per cent. of the original number were again positive. Some of these patients had the first negative blood test after six years' persistent treatment. Several of the patients in this group received heroic treatment, as many as sixty-eight injections of arsphenamin and 165 injections of mercury being given.

The late quiet cases show slightly better results than do the late active cases; for, while they gave 100 per cent. positive tests before treatment, only 47 per cent. of the group were positive after three years' treatment, as compared with 34 per cent. positive after three months' treatment. In this group there were six cases of hereditary infection; and in none of these, in spite of enormous dosage and long treatment (for example, in one case for seven years), have we been able to produce even a temporary negative.

CONCLUSIONS

The Wassermann test is not infallible, and its value is greatest when its limitations are clearly comprehended.

Some of these limitations are dependent on technical details with which the clinician must familiarize himself until the time arrives when all serologists agree on a standardized technic.

Other limitations are dependent on the biologic processes involved.

Accepting the test as diagnostic in the vast majority of cases, it also serves as an indication of the success of treatment.

The data presented in this report emphasize that the earlier treatment is instituted and the more vigorous the early treatment is, the greater the likelihood of obtaining a serologic cure.

Human Engineer.—One of the big problems the human engineer can help to solve is that of placing the handicapped worker where his services can be of most value to himself and to industry. By so doing the economic independence of the worker is assured, his mental attitude is directed into right channels and he becomes a community asset rather than a liability.—F. L. Rector: *Public Health Rep.*, Jan. 9, 1920.

HIGH GRADE HEART BLOCK

THE INFLUENCE OF POSTURE, RESPIRATION AND EXERCISE

S. CALVIN SMITH, S.M., M.D.
PHILADELPHIA

The case of high grade heart block herein reported has certain unusual features which make it of clinical and scientific interest. In the first place, there was an absence in the previous history of those diseases which so frequently induce heart block, such as syphilis, diphtheria or other long-continued or acutely severe infections. Secondly, the clinical laboratory and roentgen-ray examination confirmed, respectively, the negative findings of the clinical history and the positive findings of the physical examination. In the third place, the phenomenon occurred in a young man of 20 years,

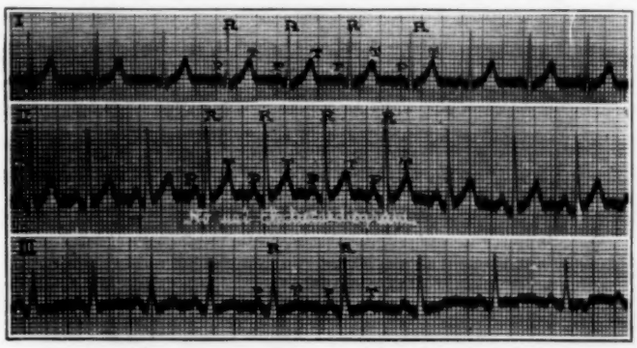


Fig. 1.—Normal electrocardiogram of girl of 16 years, for comparison with Figure 2 and others of this series. The *P* wave is produced by the impulse which precedes contraction of the auricles. In normal sequence, the auricular impulse is followed at a later interval (varying from 0.12 to 0.18 second) by the ventricular complex *R* and *T*, which represent, respectively, initial and final activity at the base of the ventricles. However, the contraction impulse may be blocked in its course so that no impulse gets through from auricle to ventricle, and the ventricles then contract utterly independently of the auricle; such complete dissociation produces the complete heart block shown in the following records.

who is apparently in robust health and totally unconscious of such physical limitations as heart block may be expected to induce. Fourthly, the heart exhibited high grade block under various circumstances of test until the patient forcibly expelled the air from his

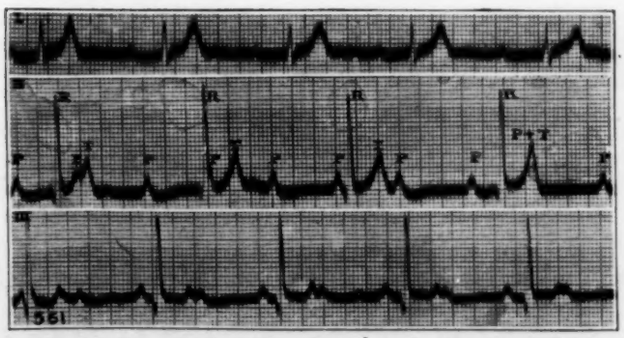


Fig. 2.—Heart block in an apparently healthy youth of 20 years, sitting; ordinary quiet breathing; auricular rate, 100; ventricular, 44; grade of block, complete. (Time interval between the heavier perpendicular lines = two-tenths second.)

lungs; there then ensued the unquestionably *normal* sequence of atrioventricular events graphically recorded in Figure 6. So far as I know, the combination of findings in one patient is unique.

REPORT OF CASE

History.—W. Z., an unmarried merchant, aged 20, and a Pennsylvanian by birth, came to Philadelphia to have an operation for the correction of a deflected septum and for

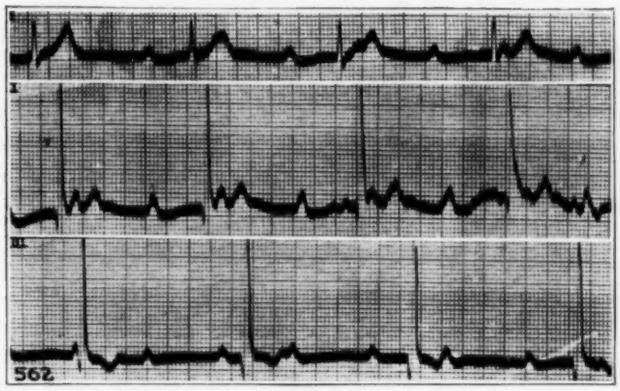


Fig. 3.—Patient recumbent; ordinary quiet breathing: auricular rate, 84; ventricular, 42; grade of block, complete.

the removal of a hypertrophied turbinate. It was discovered that his pulse rate was 48 beats per minute. He was placed under observation in a hospital for three days and, when there were no further developments and as the pulse showed no change in rate, the patient was referred for cardiovascular study.

The youth had no symptoms whatever of which he could actively complain, and regarded with amusement the concern which his surgeon displayed over his physical condition. He had that week played baseball and had run the four bases with no more distress and with no more shortness of breath than his fellows. Being fond of dancing, he frequently danced

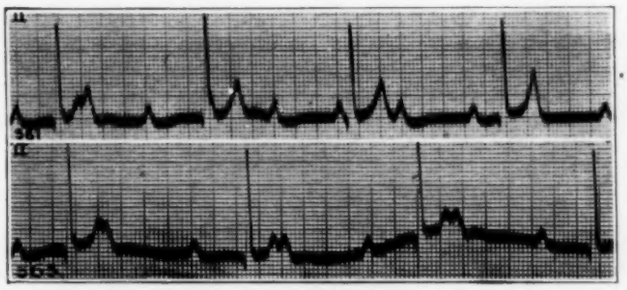


Fig. 4.—Patient in knee-chest position (the patient's customary Lead II surmounts the experimental record for comparison): auricular rate, 82; ventricular, 40; grade of block, complete.

until the morning hours and had never felt physical discomfort. He was symptom free.

The father died at the age of 57 of cancer of the liver; the mother is living and in good health at the age of 69. The patient is the youngest of a family of eight children who range in age from 40 to 20 years, all but one of whom are living and in good health, a sister having died in her eighteenth year of pneumonia.

When 3 years of age, Mr. Z. was first found unconscious in the yard of his home. An elder sister recalls that he subsequently had such periods of unconsciousness at unexpected moments and at intervals of perhaps three or four months for the next six years; she described the child as suddenly turning white, falling heavily to the floor, lying motionless for five or six minutes, and shortly after resuming play.

At the age of 7 the patient had measles and was in bed for nine days; there were no complications or sequelae.

At the age of 9 the last periods of unconsciousness occurred, one while at an evening wedding and the other on the following morning. These were similar to other attacks, but lasted for perhaps ten or fifteen minutes. Throughout his school

days the boy played as did other boys, physically undisturbed and without recurrence of the fainting spells. He was in bed for ten days with influenza during the epidemic of 1918, convalescence being prompt and uneventful.

Fig. 5.—Patient standing; forced inspiration (the patient's customary Lead II surmounts the experimental record for comparison): auricular rate, 110; ventricular, 48; grade of block, complete.

Positive Physical Findings.—The patient was a robust and moderately muscular youth of healthy appearance, mentally alert and of tranquil disposition. The weight was 148 pounds, in physiologic ratio to his years and height of 67 inches.

The right nostril was occluded. The lobes of the thyroid were slightly enlarged, symmetrical, smooth, nonindurated and nonpulsating. The anterior tonsillar pillars were reddened, and the tonsils moderately enlarged with well developed tonsillar crypts.

The right upper first bicuspid tooth had a large filling, as had also the left first molar and lateral incisor. None of the teeth were sensitive, nor did they give sensations of elongation or tenderness.

The radial arteries were slightly resistant, the pulse deliberate and well sustained, with radial and ventricular rates, 43.

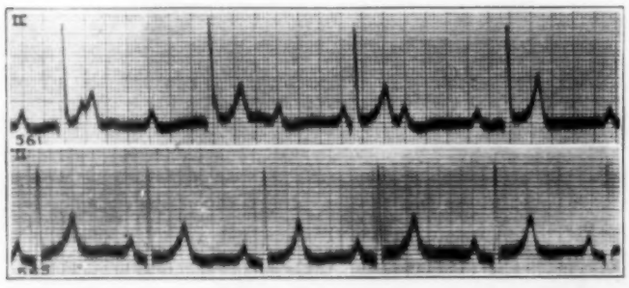


Fig. 6.—Patient standing; forced expiration (the patient's customary Lead II surmounts the experimental record for comparison): auricular rate, 58; ventricular, 58; grade of block, none. (Time interval between perpendicular lines = one-tenth second.)

The precordial impulse was circumscribed, distinct and striking, the maximum impulse being in the fifth interspace, 9.5 cm. to the left of the midsternal line. The percussion diameter of the aortic arch was 7.5 cm.; right cardiac border, 3 cm. from the midsternal line; left border, 11.5 cm., making a total transverse cardiac diameter of 14.5 cm., which constitutes cardiac enlargement in this long type of chest. There was an apical systolic murmur present: there was a basal systolic murmur transmitted over the right subclavian artery.

TABLE 1.—BLOOD PRESSURE ESTIMATES

	Standing	Recumbent	Recumbent After Ten Bending Movements
Systolic	130	138	138
Diastolic	80	92	78
Pulse pressure	50	46	60

Electrocardiographic Studies.—The legends of Figures 2 to 10, inclusive, are for the most part sufficiently explanatory and confirm the clinical suspicion of heart block. The knee-chest record (Fig. 4) was taken to inquire what effect would be produced on the cardiac mechanism by the upward pressure of the abdominal contents on the heart. In Figures 7 and 8, the pneumogastric nerves were compressed to determine whether right vagal pressure would decrease the rate of the heart or whether left vagal pressure would alter the rhythm. In Figure 10, atropin sulphate, 1/60 grain, was administered hypodermically at the conclusion of the studies, half an hour prior to the taking of the record, for the purpose of releasing the heart from vagal control and thus determining whether the vagus nerve played any part in the production of heart block.

Roentgen-Ray Studies.—Roentgen-ray studies of this patient were considered advisable for the purpose of confirming the cardiac enlargement; to inquire into the condition of the aorta; to determine the presence of intrathoracic conditions which might be exerting pressure on the heart or altering its position, and to confirm, by fluoroscopic recognition of multiple auricular contractions, the presence of heart block.

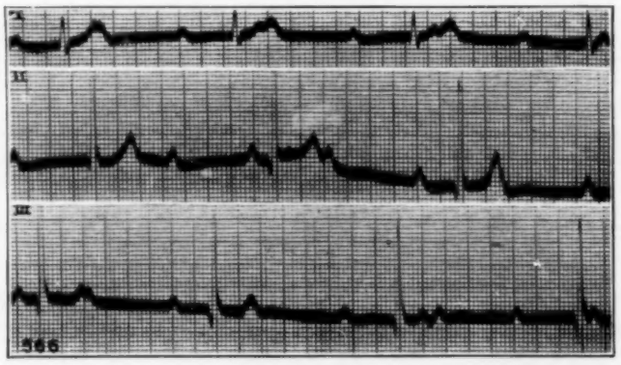


Fig. 7.—Patient recumbent; right vagal pressure: auricular rate, 86; ventricular, 38; grade of block, complete.

Dr. G. E. Pfahler made these observations on the roentgen-ray studies:

"In the teeth there is an abscess about the roots of the upper left lower first molar. There is decay under the filling on the posterior surface of the left lower second molar. There is some slight pyorrheal absorption elsewhere.

"As you will recall from our fluoroscopic studies of the chest, we found the heart increased in size. By careful illumination we were able to see two auricular beats to one ventricular beat. Preceding the first auricular beat there was a very strong auricular dilatation, and this auricular dilatation followed immediately after a strong ventricular contraction. During forced exhalation the heart was tilted upward to the left. The upper mediastinal shadow was increased in size. You will recall then that we made two teleoroentgenograms at a distance of 2 meters from the source of the rays so as to eliminate any exaggeration. One of these was made while the patient held his breath supposedly at normal inspiration. The second was made supposedly during forced expiration.

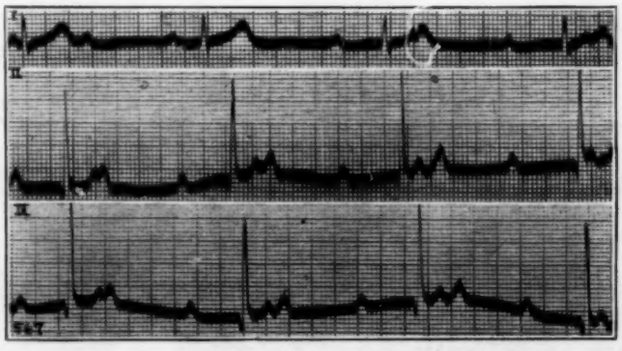


Fig. 8.—Patient recumbent; left vagal pressure: auricular rate, 84; ventricular, 40; grade of block, complete.

"When comparing the two [Figs. 11 and 12] you will see that during forced expiration the right side of the diaphragm is raised one-half inch higher than in normal inspiration, and the left side of the diaphragm is raised three-fourths inch higher than during normal inspiration. As a result, the width of the shadow of the heart is increased 1 inch, which is due to the tilting upward of the apex of the heart and causing the heart to lie in a more horizontal position. This would naturally relax the support of the heart to a considerable extent and relieve any tension that would be due to traction on the nerves or any support of the heart.

"The width of the cardiac shadow in forced inspiration is 14.5 cm. The thoracic cavity diameter in forced expiration is 24 cm. The width of the cardiac shadow in normal inspiration is 13 cm. The thoracic cavity width in normal inspiration is 25 cm. Therefore, the cardiothoracic ratio is 54 per cent., normal being from 43 to 50 per cent."

TABLE 2.—VARIATIONS IN RATE OF FIGURES 2 TO 10

Circumstance	Auricular Rates	Ventricular Rates	Degree of Block
2. Seated	100	44	Complete
3. Recumbent	84	42	Complete
4. Knee-chest	82	40	Complete
5. Forced inspiration	110	48	Complete
6. Forced expiration	58	58	None
7. Right vagal pressure	86	58	Complete
8. Left vagal pressure	84	40	Complete
9. Exercise test (100 hops)	106	64*	Complete
10. Thirty min. after atropin	94	56*	Complete

* Indicating that the lower pacemaker (ventricular, in the atrioventricular node) was under nerve control.

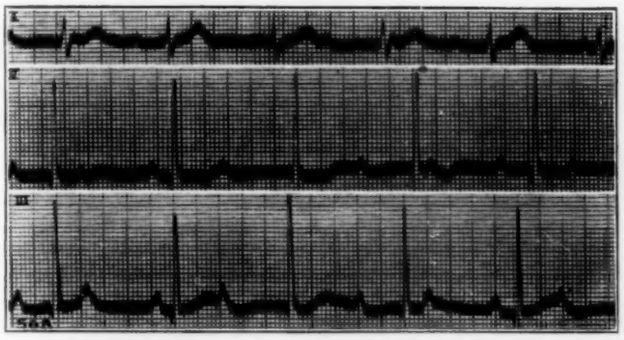


Fig. 9.—Patient sitting, immediately after exercise test of hopping 100 times on one foot: auricular rate, 106; ventricular, 64; grade of block, complete.

Clinical Laboratory Findings (by Dr. Russell Richardson).—Blood examination revealed: Wassermann test, negative; red blood cells, 5,120,000; hemoglobin, 98 per cent.; white blood cells, 9,100. The differential count revealed polymorphonuclears, 61 per cent.; large lymphocytes, 4 per cent.; small lymphocytes, 25 per cent.; transitionals, 7 per cent.; large mononuclears, 2 per cent.; eosinophils, 1 per cent.

Urine examination revealed: Evening specimen; amber; turbid; no sediment; acid; specific gravity, 1.014; no albumin; no sugar; microscopically, only a few epithelial cells. Morning specimen: amber; clear; no sediment; acid; specific gravity, 1.016; no albumin; no sugar; microscopically, a few epithelial cells and leukocytes.

Treatment and Subsequent Observation.—In the search for a focus of infection, and in the absence of any systemic affection that might perchance throw an additional burden on a heart mechanism already abnormal from childhood, suspicion had fastened on the probability of infective teeth and, to a lesser degree, on the tonsils. It was felt that such a diseased condition of the tonsils as might be present could be in a sense secondary to the dental infection, and that attention should first be directed to the teeth; consequently, the left lower first molar and second bicuspid were extracted. Earle C. Rice, D.D.S., reported that 30 minims of a 2 per cent. solution of procain in combination with suprarenin were injected; the peridental membrane was undoubtedly infected; it presented a deep red color and was slightly thickened; on curettement there was but little inflammatory tissue in the socket. It is of interest to note that the employment of procain-suprarenin caused no variation in the pulse rate, which was 48 beats per minute before employment of the drug and throughout the extraction, despite the fact that the drugs, so employed, frequently cause a marked acceleration in pulse rate. Dr. Richardson subsequently reported that cultures of the tooth socket showed many hemolytic streptococci, and prepared a vaccine containing 1,000 million such bacteria to each cubic centimeter, which is now being employed in the case.

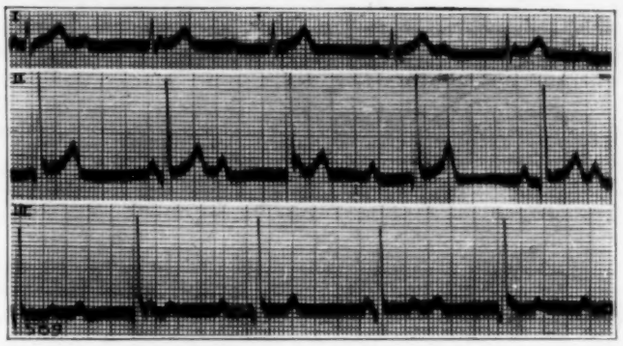


Fig. 10.—Patient recumbent, thirty minutes after 1/100 grain of atropin; auricular rate, 94; ventricular, 56; grade of block, complete.

The rationale of such therapeutics is based on the thought that infective processes and septic absorption frequently cause an acceleration in heart rate; by removing the cause and increasing the individual's resistance to an autoinfection, the heart could be expected to lessen in rate; in this particular case the abnormal heart mechanism apparently became normal (Fig. 6) when a lessened auricular rate permitted the ventricle to respond to each auricular impulse. Hence, it is logical to employ such measures as could be reasonably expected to aid in establishing a normal rhythm to the cardiac mechanism.

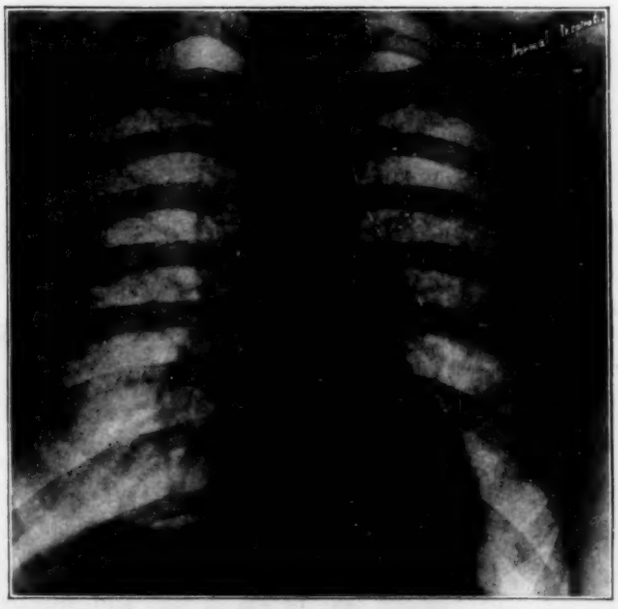


Fig. 11.—Cardiac outlines of patient during normal respiration. (The roentgen studies were made by Dr. G. E. Pfahler.)

CONCLUSIONS

First of all, one is convinced from the records herein presented that the customary method of taking electrocardiographic curves — the recording of but twenty or thirty heart beats of the 108,000 or more

which the heart makes in its twenty-four hour day, and the making of such records with the subject in the sitting position alone—is unfair to the physician, unjust to the patient, unscientific on the part of the cardiologist, and constitutes an abuse of the splendid possibilities of electrocardiography. Records should at least be taken before and after exercise, and at such time of the day as the patient is the more often conscious of his heart affection. In this manner valuable information may be secured which would be altogether missed in the casual snap-shot electrocardiogram.

Many problems, deviating from the customary management of a patient with high grade heart block, present themselves in the light of these records. Unquestionably, the prognosis in this instance is not the same as one would give in the usual case of heart block, where the life expectancy is three years. The behavior of the pulse under procain-suprarenin solution at the time of dental extraction is sufficient warrant for

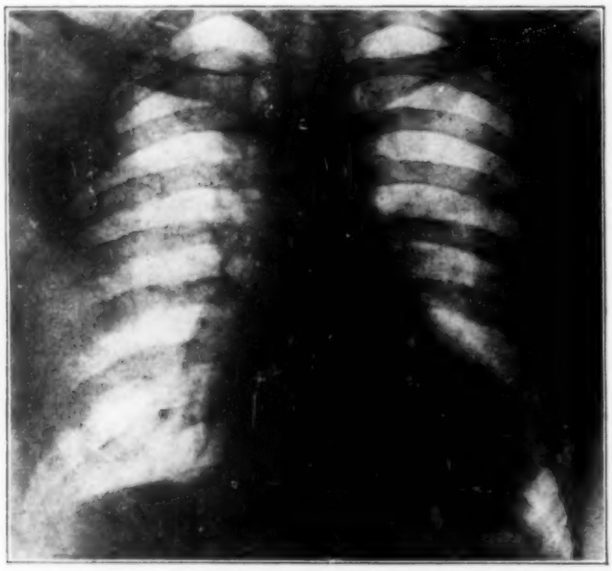


Fig. 12.—Cardiac outlines of patient during forced expiration. The heart is more horizontal and its shadow increased 2.5 cm.

sending the patient back to the rhinologist with the opinion that there is no present contraindication to the proposed nasal operation if performed under local anesthesia.

The favorableness of the prognosis as to life (even though one be less hopeful as to cure) brings up the question of latitude in management. Shall this young man be required to forego athletic games and dancing and be consigned to a life of daily heart care? Should marriage be advised against? Would life at a lower altitude than that of his present mountain home offer sufficient hope of heart correction to warrant him in abandoning a prosperous business? Certainly he should pay strict attention to the rules of hygiene and proper living, and should be made aware of the fact that ordinary infections are fraught with an unusual degree of danger to one with a heart already abnormal—*but should he lead the life of a cardiac invalid?* The questions are answered in the affirmative: high grade heart block is a condition in which a cardiac emergency may arise with alarming suddenness—and the professional obligation is to guard against such cardiac emergency.

SUMMARY

1. A case of high grade heart block, in an active youth of 20 years with negative previous history, has evidently existed since childhood, despite the fact that heart block is usually encountered in persons past the meridian of life with definite histories of previous infections, and despite the fact that the average life expectancy in high grade heart block is three years.

2. The case was studied under various circumstances, including the changes induced by posture, respiration, exercise, vagal pressure and drug administration; the graphic records indicated that on forced expiration the heart block disappeared and that a normal sequence of cardiac events ensued. Fluoroscopic study confirmed these findings.

3. Roentgenograms indicated that the position of the heart was altered when the cardiac mechanism became experimentally natural, thus suggesting that the lessening of traction or the relief of pressure on heart tissue may play a part in the experimental reestablishment of natural cardiac rhythm.

323 South Eighteenth Street.

THE TREATMENT OF ACUTE TETANUS

REPORT OF A SUCCESSFUL CASE *

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AND

W. B. McKENNA, M.D.
Visiting Surgeon, Pittsburgh Hospital

PITTSBURGH

The case herewith reported derives its interest from the successful result obtained in a well marked and typical example of acute tetanus in which the beginning of treatment was delayed.

The treatment of tetanus, in essence, consists of neutralizing the toxin, allaying the symptoms, and keeping the patient alive.

For the neutralization of the toxin there is only one method of treatment: the early and vigorous use of antitoxin in sufficient amount. The *early* administration of antitoxin is of paramount importance, as the presence of symptoms is conclusive evidence that there is serious poisoning, that the toxin has been present and in contact with the cells for some time, and that union has occurred—a union which, so far as is known, is not susceptible to dissociation.

There is experimental evidence, however, to show that there is, apparently, an interval of time during which the toxin is in contact with the cellular surface and within the cellular fluids before true union occurs. Experiments have also shown that if, during this time, the cells are surrounded by an antitoxin in strong concentration, a part, at least, of the toxin may pass out of the cells by a process of osmosis, union with the cell being thereby prevented. The route by which the antitoxin is administered is of great importance and was carefully considered in the present case.

As the major portion of the toxin enters the blood and thence passes into the tissues, the injection of the neighboring nerve trunks was not considered essential or of sufficiently pronounced efficiency to warrant the

* From the laboratories and the surgical department of the Pittsburgh Hospital.

use of this method. Intraspinal injection was considered, but, as the serum so administered does not come into contact with more than the surface of the cord, the underlying, deeper portions being unaffected, and, as in any event, serum—and toxin—must first be accumulated in the blood before passing out into the tissue fluids by which the cells are bathed and through which contact with them is established, this route was not chosen.

Intracerebral injections must also be absorbed by the blood; they add, moreover, an element of danger and shock. They, also, were therefore discarded, while the subcutaneous and intramuscular channels are too slow in absorption.

The intravenous injection of antitoxin, on the other hand, causes the immediate neutralization of all toxin present in the blood as, also, within a few hours, of all toxin present in the lymph and cellular fluids, and was therefore the method of choice. The problem, then, was the comparatively simple one of keeping the blood saturated with antitoxic antibodies.

The importance of large dosage was obvious, particularly in this case, in which treatment had been delayed. The large dosage administered was not given with the thought that the blood necessarily contained large amounts of toxin, but because of the fact that only a relatively small proportion of the antitoxin so administered passes out into the cellular fluids. In order to get the antitoxin to the cells in appreciable amount, with the hope of neutralizing toxin present but not yet actually united with the cells, a high concentration is necessary in the blood.

Amputation of the affected part for tetanus alone, when the surgical condition does not demand it, is not advised, as the accompanying shock does more harm than good.

The Baccelli treatment by injections of phenol (carbolic acid) was rejected, as it has not proved successful in experimental tetanus in animals, and it was felt that antitoxin offered the best and only chance.

Drugs are of some assistance as aiding in the conservation of the strength of the patient and in relieving pain. Magnesium sulphate was not used in this case, though a powerful anodyne, because of the danger of profound respiratory depression. Chloroform presents the danger of toxic effects when its use is prolonged or frequent, and reliance was placed on chlorbutanol.

REPORT OF CASE

History.—J. McC. (Serial No. 119), a colored man, was admitted to the Pittsburgh Hospital, Sept. 20, 1920, for stiffness of the jaws and pain in the neck and shoulders. While he was trying to jack up a truck, September 9, the index finger of the right hand was crushed between the wheel of the truck and the street. The wound received hospital treatment, but a prophylactic injection of tetanus antitoxin was not administered. It was thereafter dressed at irregular intervals, the patient remaining at work. Eight days after the original injury, the patient was conscious of pain in the jaws and arms, and some slight stiffness of the jaws which became progressively worse. He consulted a physician, receiving some medicine which gave no relief. The following day he was no better, had been unable to sleep that night, and came to the hospital in the morning.

Examination.—On admission, the patient, who was slender and of spare build, was in evident pain and discomfort. He was unable to open his mouth more than half an inch, had obvious difficulty in sitting down, and complained of stiffness of the neck and pain in the jaws and shoulder muscles. The abdominal muscles were as rigid as iron, the abdomen everywhere giving a sensation of stony hardness to the touch. The wound of the finger was covered with a grayish necrotic slough, and oozed a sanguineous serum. There was no general rigidity of the body, though there was some indication of stiffness of the back and legs. The temperature was 99 F., shortly afterward rising to 102. The admission pulse was 88, shortly afterward rising to 110.

Treatment and Course.—Immediately on admission, the patient was given 10,000 units of antitoxin—all that was on hand. A few hours later he became extremely rigid, the jaws tightly clenched, and a slight retraction of the neck was noticed, though typical bowing of the body as a whole did not occur. He complained bitterly of pain.

The wound, after having been thoroughly cleansed and after drainage was established, was kept wet with a constant hydrogen peroxid drip, utilized because of its free generation of oxygen. Smears from the wound showed streptococci. Anaerobic cultures (hydrogen and pyrogallic acid technic) gave a growth of typical tetanus bacilli of classic shape.

Five hours after admission the patient received 20,000 units of antitoxin intravenously. He was also given 40 grains of chlorbutanol by rectal injection, every four hours for two days.

The antitoxin treatment was entirely intravenous, the injections being given as follows:

September 20: 10,000 units, 9 a. m.; 25,000 units, 2:30 p. m.
September 21: 20,000 units, 9 a. m.; 20,000 units, 6 p. m.
September 22: 20,000 units, 9 a. m.
September 23: 20,000 units, 9 a. m.
September 24: 20,000 units, 9 a. m.
September 25: 5,000 units, 9 a. m.

A total of 140,000 units was given, all told.

On the 21st, the general condition was about the same. The neck, however, was perceptibly drawn back, the jaws rigid, and the patient complained of severe pain in the back and abdomen.

On the 22d, there was a slight improvement in that the attacks of pain were less frequent and less severe, the general rigidity being unchanged, however.

On the 23d, there was much less pain, the jaws could be slightly opened, the neck was not so stiff, and the patient was able to take liquid nourishment with more ease. The finger wound on this day was clean in appearance and doing well.

On the 24th and 25th, there was progressive improvement, though of slight degree. The patient slept fairly well in snatches, and was able to take liquids freely. On the 26th and 27th, the condition rapidly improved, the jaws relaxing to a well marked degree, and from this time on improvement was steadily observed.

October 1, the jaws were freely relaxed, there was no pain, and the neck was limber. The abdominal muscles, however, were still stony hard.

October 5, the finger wound was all closed and covered with healthy tissue, and the patient was on full diet and feeling well and comfortable.

At no time was the temperature over 102 F. or the pulse above 120.

The urinalyses disclosed only a trace of albumin and a strong acetone reaction, both of these reactions clearing up before discharge.

The patient was discharged, October 11, perfectly well except for some muscular aching in the limbs comparable to that found after severe or unaccustomed muscular exercise, the abdominal muscles still being somewhat rigid.

COMMENT

We are aware that the frequent administration of large doses of antitoxin is not deemed necessary if a sufficiently large amount is given early in the treatment. It was hoped, however, that by keeping the blood saturated with antitoxin, perhaps some of the toxin present in but not yet united with the cells might be neutralized, or its union with the cells prevented.

If the treatment in this respect was not secundum artem, it was, nevertheless, successful.

We report the case simply as another illustration of the probabilities inherent in the vigorous and continued use of antitoxin even when an initial delay renders the prognosis extremely dubious.

RHABDOMYOMA OF THE NOSE

REPORT OF A CASE

GEORGE S. REITTER, M.D.
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Its unusual feature, together with its being classed as rare, has prompted me to report this case.

I find that only one other case of a rhabdomyoma located on the nose has been reported, that by Erdman.[1]

The early classification of rhabdomyoma is not at all uniform, some authorities calling it teratoma, on account of its being of the mixed variety of embryonal type of tissue. It was first classified as a tumor by Rokitansky,[2] who described a rhabdomyoma of the testicle. Brock[3] referred to Rokitansky's case, and had collected sixty-seven published reports of the condition, occurring in various parts of the body.

Wolbach[4] reported a series of twelve cases of rhabdomyoma of the heart, in seven of which there was cerebral sclerosis.

In Wolfenberger's[5] review of sixty-three cases of rhabdomyoma, thirty-eight cases involved the urogenital system. Squier[6] reported one of the prostate of the mixed type (rhabdomyomatous sarcoma), while Kauffman reported three others of the same type. Ludwig Pick reported fourteen cases occurring in the vagina of children, with one extending to the rectum. In this location, they are rapidly fatal. In reviewing the literature, Holmes,[7] in 1907, reported thirty-nine cases occurring in the vagina of infants, though the descriptions of them are much diversified. Vincenzi found one in the urinary bladder. Ewing[8] gives a comprehensive survey, and cites, in addition to the foregoing, rhabdomyomas of the esophagus, stomach, tongue, parotid gland, breast, left lung, spinal vertebrae, tibia, and skeletal muscles in various parts of the body and extremeties.

Fig. 1.—Appearance of growth from the right.

1. Erdman: Virchows Arch. f. path. Anat. **43.**
2. Rokitansky: Ztschr. f. Gesellsch. d. Aerzte, Vienna **5**: 331, 1894.
3. Brock: Ztschr. f. Gesellsch. d. Aerzte, Vienna **5**: 331, 1894.
4. Wolbach, S. B.: J. M. Res. **16**: 495 (July) 1907-1908.
5. Wolfenberger: Beitr. z. path. Anat. u. z. allg. Path. **15**, 1894.
6. Squier, J. B.: Progr. Med., December, 1916.
7. Holmes, O. L.: Pediatrics **19**: 95, 1907.
8. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1919, p. 213.

REPORT OF CASE

A girl, aged 14, who entered the Indiana Radium Institute, June 29, 1920, and whose family history was negative, had been struck on the left side of the nose with a ball, eight years before. At that time there was only a bruise, which apparently healed. Eight months afterward, a small swelling was noticed which gradually grew to be a good sized tumor. It had always been hard, the skin over it quite normal, with no pain at any time. For the last four years her father had not noticed any further enlargement of it.

Fig. 2.—Appearance of growth from the left.

The tumor was located a little more on the left side of the nose than on the right, though it involved virtually all of the nose and completely distorted the normal relations of the parts, as shown in the accompanying illustrations. The external nares were twisted round to the right side. The nasal passages were completely closed. Evidences of invasion of the superior maxilla were shown in the hard palate and left superior alveolar ridge. On palpation, the tumor felt like cartilage, and the skin was not adherent to it. From cheek to cheek the tumor measured 6¼ inches. From the lower border at the middle of the upper lip to the upper border between the eyes, it measured 5 inches. The roentgen ray detected no evidence of bony structure in it.

A Wassermann test was negative. A section was removed for histologic examination, and Dr. Virgil H. Moon reported that the specimen was pale red, and had no gross features of significance. Paraffin sections, stained with hematoxylin and eosin, on microscopic examination were found to consist of irregular bundles of fibers closely resembling those of striated muscles. These bundles consisted of varying numbers of fibers running in many directions without regular arrangement. Each fiber had a distinct sarcolemma, and cross-striations were visible. The fibers were somewhat coarser than those of normal striated muscle. The bundles of fibers were separated by areas of delicate connective tissue containing numerous vessels. There were no areas of necrosis in the sections examined. No mitotic figures were visible, nor other evidences of malignancy.

The diagnosis was rhabdomyoma.

As the father refused to consider any surgical procedures, an attempt was made to reduce it with radium, July 24 and 25. Only the gamma rays were used. Three hundred milligrams of radium element, screened with 3 mm. of lead and 2 mm. of rubber, at a distance of 2 cm., a total of 6,500 milligram hours, were applied to four areas, which completely covered the surface of the tumor. Macroscopically, no change in the tumor was noted, except for a slight transitory erythema that lasted for three days.

August 19, the tumor measured from cheek to cheek 5 inches, and from the lower to the upper border, 4¼ inches, a reduction of about an inch in the outside circumference.

September 20, the girl's father informed me by letter that there had been no further reduction in its size, and that he refused to allow any more radium to be used.

COMMENT

A search of the literature does not show any cases of rhabdomyoma that have been treated with radium.

My experience with this case leads me to believe that rhabdomyomas that have an abundance of the connective tissue elements will show partial, if not complete, retrogression when treated with heavy doses of radium.

1108 Central Avenue.

FOOT DROP FOLLOWING LAPAROTOMY*

J. W. DUNCAN, M.D.
OMAHA

I have observed two cases of paralysis of the anterior tibial group of muscles with complete foot drop immediately following laparotomy in which the Trendelenburg position was employed. Both resulted in early and complete recovery.

REPORT OF CASES

CASE 1.—Mrs. C. C., aged 24, widow, clerk, operated on, Sept. 24, 1915, for double pyosalpinx of gonococcic origin, was placed in the Trendelenburg position for laparotomy, the position being maintained by securing the legs at about the middle third with a broad quilted muslin band passed through perforations in the table. The operation lasted one hour and was completed without incident. Immediately on awakening, the patient complained of a left foot drop. Examination revealed no cause for this. There was no pain in the leg. Operative recovery was uneventful, but the patient was incapacitated for one and one-half months on account of foot drop. This gradually improved on ordinary treatment to complete recovery.

CASE 2.—Mrs. S. S., aged 35, married, with five living children, operated on, May 24, 1920, for left pyosalpinx, following an abortion, probably self induced, was anesthetized and placed in the Trendelenburg position, the legs being secured as in the previous case. The operation lasted fifty minutes and was completed without incident. Immediately on regaining consciousness the patient, who did not speak English, complained to a friend of a right foot drop. This was not called to the attention of the nurse or the surgeon until an attempt was made to walk twelve days after the operation. A marked foot drop was present, and examination revealed distinct tenderness posteriorly over the head of the right fibula. Under support and massage, the condition gradually improved to complete recovery in six weeks.

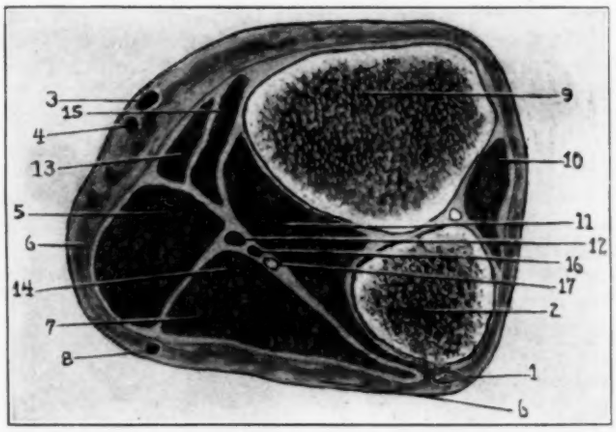

Fig. 2.—Cross-section of right leg just below head of fibula: 1, nervus peroneus communis (external popliteal); 2, fibula; 3, vena saphena magna; 4, vena saphena accessoria; 5, musculus gastrocnemius (medial head); 6, skin and fat tissue; 7, musculus gastrocnemius (lateral head); 8, vena saphena parva; 9, tibia; 10, musculus extensor longus digitorum; 11, musculus popliteus; 12, arteria poplitea; 13, musculus semitendinosus tendon; 14, musculus plantaris; 15, musculus semimembranosus tendon; 16, vena poplitea; 17, nervus tibialis (posterior tibia).

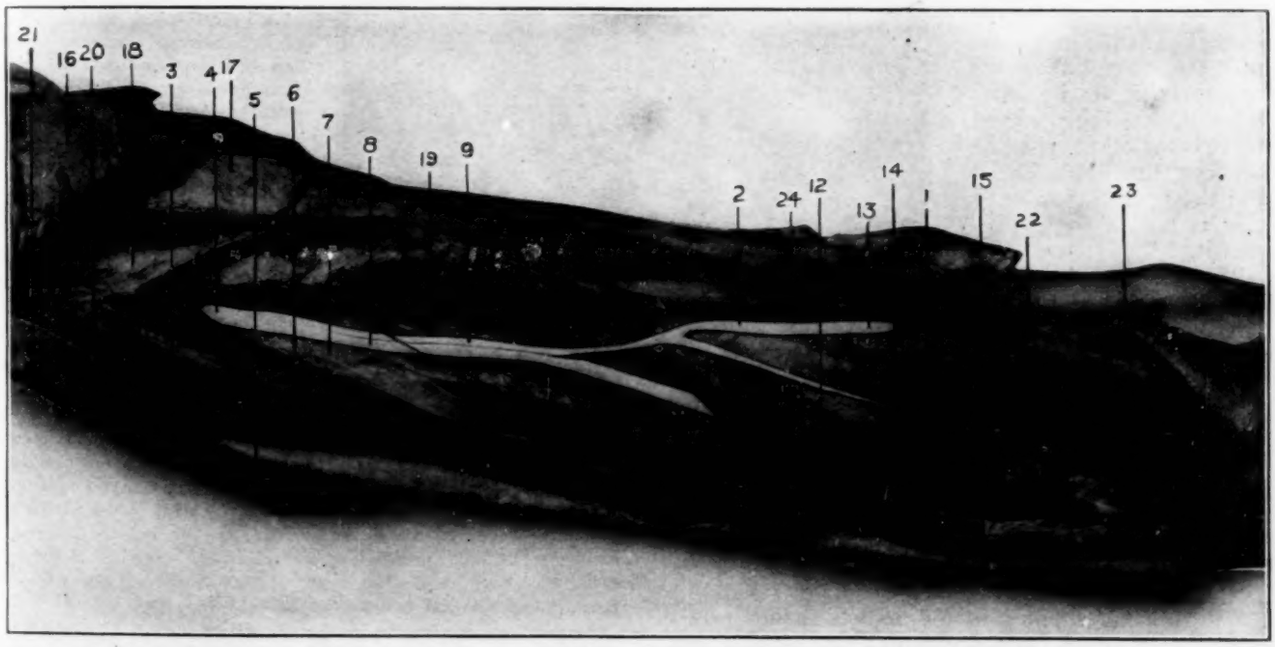

Fig. 1.—Dissection of muscles and nerves of posterior aspect of knee joint: 2, 13, nervus peroneus communis extending downward over posterior aspect of head of fibula, and disappearing under biceps tendon; 3, musculus gracilis; 4, nervus sciaticus; 5, 15, 16, 21, 23, reflected skin; 6, musculus semitendinosus; 7, musculus semimembranosus; 8, internal popliteal nerve; 9, external popliteal nerve; 12, musculus gastrocnemius (internal head); 1, musculus gastrocnemius (external head); 14, nervus peroneus communicans; 17, musculus vastus externus; 18, musculus biceps femoris (long head) reflected, exposing nerves; 19, musculus biceps femoris (short head) reflected, exposing nerves; 20, superficial fascia; 22, musculus soleus; 24, biceps femoris tendon.

COMMENT

In both these cases a paralysis, not preexistent, was noticed immediately on recovery from the anesthetic. This paralysis seems clearly to have been incurred in

* From the Department of Surgery of John A. Creighton Medical College.

some way between the time the patient left the bed for the operating room and that at which she returned.

The muscles involved—the extensors of the toes and foot, the tibial anticus and the peronei—are supplied by the external popliteal nerve, and the explanation of the paralysis, I believe, lies in pressure on that nerve when the patient is placed in the Trendelenburg position.

The peroneal nerve, in the upper part of the popliteal space, lies underneath the biceps, but in its descent inclines gradually outward between the tendon of the biceps and the outer head of the gastrocnemius. Passing over the latter, it lies posterior to the head of the fibula, where it is covered only by a small amount of fat, the superficial fascia and the skin.

If one flexes the knee to a right angle and makes pressure just behind the insertion of the tendon of the biceps into the head of the fibula and on the posterior surface of the fibular head, the nerve, like the ulnar behind the elbow joint, is easily located, especially if there is little subcutaneous fat. Further, if one assumes the Trendelenburg position on the operating table, the legs having been secured and no shoulder support having been used, it will be found that the unprotected posterior surface of the head of the fibula lies firmly in contact with the lower leaf of the table. It is easily conceivable that the peroneal nerve is sometimes pinched between the fibular head and the operating table if care is not taken to prevent it.

The practice of "breaking" the table and dropping the knees quickly may easily pinch the nerve. Or, placing the patient too high on the table, so that accurate adjustment of the knee joints to the break in the table is not secured, will cause pressure. Also, the practice of depending on the flexed knees with the legs secured to the table to maintain a satisfactory Trendelenburg position is reprehensible. In every case, shoulder supports should be used to prevent slipping of the body and thus protect the peroneal nerve from pressure.

Care is customarily taken to protect the musculospiral nerve from pressure while the patient is under anesthesia to prevent wrist drop. The peroneal nerve is the homologue of the musculospiral in the lower extremity, and I believe that my experience demonstrates the necessity for its adequate protection from injury when the Trendelenburg position is employed.

1520 City National Bank Building.

Congenital Syphilis.—At a recent medical congress in Germany the gynecologist Löser stated that one child out of every twenty-five born now has syphilis.

GAUZE SPONGE IN THE ABDOMINAL CAVITY FOR FOURTEEN YEARS

WITH SIMULATION OF ECTOPIC GESTATION *

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AND
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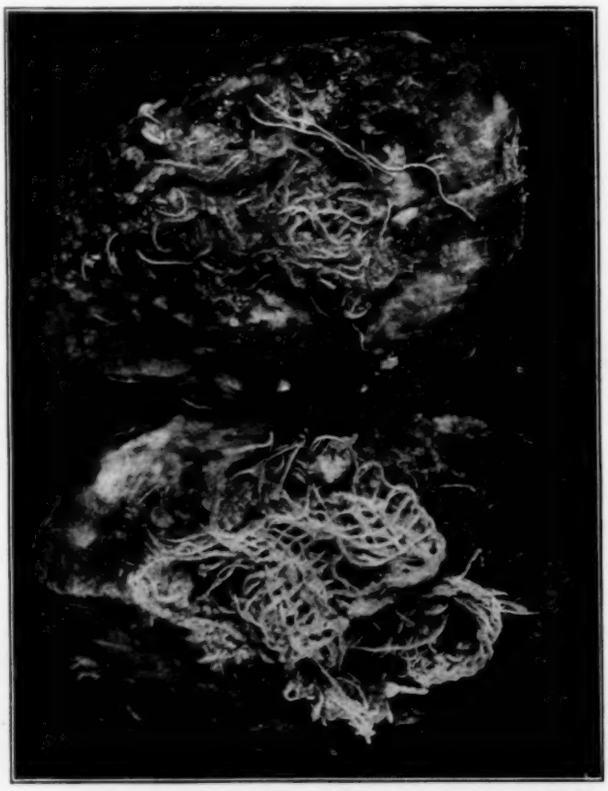
BOCAS DEL TORO, PANAMA

We report a case we believe to be unique, in which the symptoms and signs of an early ectopic gestation were closely simulated by a gauze sponge that had been present in the abdominal cavity for fourteen years, following an operation for chronic appendicitis. No symptoms other than constipation could be attributed to the presence of the gauze sponge until the onset of the present illness.



Encapsulated sponge, × 1.6.

CLINICAL REPORT

History.—Mrs. D., a white woman, aged 29, Canadian, admitted to the hospital Feb. 1, 1920, whose family history was unimportant, as a child had had measles, scarlet fever and whooping cough. Her tonsils were removed at the age of 9 years. An operation was performed in Halifax, Nova Scotia, fourteen years previously, for chronic appendicitis, at which time she was told that the appendix and a small cyst from the right ovary were removed. The menses began at the age of 13; they were always regular and of the twenty-eight day type, and lasted for six or seven days. In November, 1918, three months after she was married, she had a miscarriage. Bleeding was profuse, necessitating curettage. Recovery was uneventful. In April, 1919, she had another miscarriage and had to be curetted on account of repeated hemorrhages. Recovery was complete and uneventful. Each of these miscarriages occurred at the end of the second month of pregnancy. The last menstrual period, which began, Dec. 13, 1919, was normal, lasting seven days. She had missed her January period and considered herself pregnant.

Present Illness.—On the day of her admission to the hospital she was suddenly seized with severe cramplike pains in the lower abdomen. These were exaggerated on movement of the body and after urination and defecation. The pains were first felt in the hypogastric region, and radiated up each side to the sacral region. The duration of the pains was about four minutes, and the bearing-down character of labor pains was simulated. There was no bloody discharge from the vagina. Nausea was present for two or three weeks before the onset of the pains, and was especially marked in the mornings before breakfast. Vomiting of mucus and sour fluid was occasionally present. The appetite was not

* Read by proxy before the Medical Association of the Isthmian Canal Zone, May 21, 1920.

impaired. The bowels were constipated, but had been so for several years, so that the patient had taken a cascara pill at bedtime. The temperature showed a fairly constant evening rise to about 99.6 F., with a normal or slightly subnormal reading in the morning. The pulse rate was practically normal. The heart and lungs were negative. The abdomen moved freely with respiration. In the right lower quadrant there was a 4-inch linear scar from the operation for the removal of the appendix. There was no rigidity of the abdominal muscles. There was, however, definite tenderness low down in the pelvis and just to the right of the median line. Blood examination revealed: hemoglobin, 95 per cent.; white blood cells, 9,600; polymorphonuclears, 82 per cent.; small lymphocytes, 16 per cent., and eosinophils, 2 per cent. Urinalysis was negative. Vaginal examination revealed the uterus in good position, apparently slightly enlarged but not tender. The cervix was normal. There was slight tenderness in both lateral fornices, and an indefinite indurated area in the right fornix.

The patient was kept in bed under close observation for a week. During this time the frequency and severity of the pains subsided somewhat, but the nausea and vomiting remained about the same. The time for her February period came and the pains became very much worse both in frequency and severity. There was no menstrual discharge. The evening temperature was now usually around 100 F. Blood examination revealed 14,500 leukocytes, with 85 per cent. polymorphonuclears. Vaginal examination disclosed the indurated area in the right side of the pelvis to be somewhat larger and decidedly more tender. The uterus was freely movable and apparently a little more enlarged than at the previous examination.

A slowly rupturing ectopic gestation was considered highly probable, and operation advised.

Operation and Result.—February 18, under ether anesthesia, a low median incision was made by Dr. Watson, who found the uterus markedly congested and enlarged to about the size of a six or eight weeks' pregnancy. The left tube and ovary were normal. In the region of the right tube and ovary and densely adherent to these structures there was a hardened semisolid mass about one and one-half times the size of an English walnut. The right ovary was markedly atrophied, being about the size of a hazelnut. Dense omental adhesions completely surrounded the mass. The lower end of the ileum was likewise involved in the mass of adhesions. The tumor mass, together with the right tube and ovary, was removed. The adhesions about the lower end of the ileum were liberated and the abdomen was closed in the usual manner.

On section, the tumor mass was found to be an encapsulated gauze sponge.

At 2 p. m. on the first day following the operation, griping pains were felt in the lower abdomen over the uterus; a number of large blood clots were expelled from the vagina, and in a short time a fetus from 6 to 8 weeks old. The usual temporizing measures were instituted, and the hemorrhage ceased.

Recovery from the abdominal operation was comparatively uneventful. The wound healed by primary union. The stitches were removed on the twelfth day, and the patient was allowed out of bed on the same day. At 7 p. m., March 8, the patient complained of severe bearing-down pains over the uterus, and several large blood clots were expelled. Vaginal examination revealed retained placenta. Under anesthesia, the uterus was curetted, after which recovery followed.

The patient was discharged from the hospital, March 28.

PATHOLOGIC REPORT

We are indebted to the staff of the board of health laboratory, Ancon, Canal Zone, for the pathologic report and accompanying photograph of the specimen.

Gross Examination: Surgical specimen No. 8914 (fixed in formaldehyd) consisted of two pieces: an ovary with the distal end of a tube adherent over part of its cortex, and an encapsulated tuft of a gauze sponge. The ovary measured 15 mm. in its greatest diameter. It was a dense, contracted, rough ball of ovarian tissue with a few little cysts from 2 to 5 mm. in diameter. The fragment of tube consisted apparently of the distal quarter of the organ. The fimbriated end was adherent in an irregular manner over the cortex of the ovary and the neighboring tags of fat. It was slightly distended with a clear fluid held in small cystic compartments, but no marked hydrosalpinx had been formed. The encapsulated gauze sponge formed a large, yellowish-white, olive shaped mass measuring 4.5 cm. in its long diameter and 3.5 cm. in its short dimension. It weighed 25 gm. The split specimen presented a capsule wall ranging from 10 to 15 mm. in thickness. The cavity dimensions were 3 by 2.5 cm., and this space was filled with a ball of white gauze. The cortex of this ball of gauze was unraveled, and the fibers were firmly incased by the tissue forming the inner surface of the capsule. The center of the sponge showed layers of white gauze with a normally arranged meshwork, having no sign of a tissue infiltration. It looked like normal fresh gauze. Considerable traction was required to break a thread by pulling on its ends with thumb forceps. These fibers were not, however, as strong as a fiber taken from a new gauze sponge. The exterior of the capsule was quite tough and fibrous, while the interior was granular and friable. A large area, occupying nearly all the internal surface of one hemisphere of the specimen, had a gray slate color and was softened. A gray, semifluid material could be expressed from the cut surface of this area.

Microscopic Examination: Ovary: There was extreme atrophy, approaching the senile type. The stroma was dense, and fibrosis of the follicles was so general that no well-defined follicles could be found in any of the sections prepared. A few small cysts were present. Beneath the cortex was a broad zone of vacuolated, nonstaining tissue suggesting a subcortical fatty metamorphosis.

Fallopian Tube: The fimbriated, slightly cystic end of the tube was adherent to the cortex of the ovary The lumen was empty and distended.

Encapsulated Gauze Sponge: The external portion of the capsule presented a dense fibrosis in which many of the cells were found to contain an abundance of golden pigment. Very few places in this part of the capsule showed the presence of sponge fibers or recent focal disturbance.

The intermediate area in the capsule represented a mixed picture of fibrosis and of numerous fibroblastic accumulations with fibers at the center of the fibroblastic areas.

The inner zone of the capsule was composed of a vast number of round and oblong foci of cell activity arranged about gauze fibers as a center. These little lesions were so numerous that they fused in many places. The fibers appeared as nonstaining hyaline threads or distorted fragments of these. Immediately about the fibers were great numbers of bizarre "foreign body" giant cells. These giant cells were surrounded by an accumulation of enormous numbers of plasma cells, phagocytic cells containing pigment, and fibroblasts.

In some places new capillaries could be followed almost to the position of the incased gauze fiber; such vessels contained an abundance of neutrophilic leukocytes. No marked evidence of necrosis could be found in the tissue composing the capsule, except for the internal surface of the hemisphere, where it was noted on the gross examination to be softened and of a gray-slate color. This region revealed a large patch, on the internal surface, of amorphous débris with an extensive collection of leukocytes at the border. No bacteria were found in the sections.

Ointment Bases.—Sixteen representative pharmacists of Philadelphia were asked to determine how many prescriptions called for ointments and how many of these called for lard, petrolatum and other bases. The returns showed "out of 32,319 prescriptions examined, 1,246, or about 4 per cent., called for ointments. Of these, 791, or about 63 per cent., called for a petrolatum base and 236, or about 18 per cent., for a lard base, the balance (19 per cent.) calling for lanolin and mixed bases."—E. T. Hahn and R. P. Fischelis, Proceedings Forty-Second Annual Meeting of the Pa. Pharm. Ass'n., 1919, p. 165.

THE PRESENT STATUS OF DIGITALIS THERAPY *

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ST. LOUIS

Although the attention of medical men was directed to digitalis as long ago as 1785, and although it is and long has been one of the most widely used of drugs, our knowledge of its action clinically did not attain any degree of exactness until within comparatively recent years, and many phases of its action on patients are still unsettled. It is interesting to remember that Withering himself thought of it and described it as a diuretic. Now it is universally thought of primarily as a cardiac drug. It is given to all sorts and conditions of patients with real and suspected heart disease, sometimes with confident expectation of beneficial results, sometimes with vague hope that it will in some way work a magic cure.

Pharmacologists have been in advance of clinicians in arriving at conclusions regarding the action of digitalis. The question to be determined, of course, is: How completely can the results of pharmacologic research be applied to patients?

The basis for the commonly accepted notions about the action of digitalis on patients rests on the pharmacologic findings [1] of some years ago, after investigation of its action on frogs. A twofold action was recognized: (*a*) a stimulation of the vagus-center in the medulla which tends to slow the rate, weaken systole and prolong diastole; (*b*) a direct action on the heart muscle, increasing its tone, and thus causing relaxation to be imperfect while contraction is strengthened. In the therapeutic stage the latter action was said to predominate, thus increasing the efficiency of the heart. After large doses, however, the inhibitory effects were found to predominate, and by increasing relaxation, lessening contraction and slowing the rate, the heart's efficiency was lessened. Irregularities developed, the auricle and ventricle perhaps beat independently, and finally a rapidly beating ventricle passed into fibrillation and death. The clinician, then, reasoned that by giving only enough digitalis to produce the initial effects, the tone of the heart muscle was increased, contraction was stronger, and more blood was pumped out not only with each systole, but also—since the rate was slowed little or not at all—in a given space of time. Such reasoning, if based on correct premises, would certainly appear to be sound; but in recent years, with more exact methods of study, two questions have arisen which leave the matter somewhat less definite than was formerly supposed.

In the first place, when digitalis is given to human beings, do the same events occur, and in the same succession, as when it is administered to frogs and other animals in the laboratory? Is the human heart influenced by the same distribution of nerves and specialized tissue exactly in the same way as the heart of the animals on which the effects of digitalis have been studied in the pharmacologic laboratory? In other words, are the results of animal experimentation wholly transferable to man? If such results are not transferable to patients, then the results obtained on animals afford us little help in trying to determine the action of digitalis on the human heart. Pharmacologic findings must be verified clinically as far as possible; and if it is found that these results are transferable, the question at once arises, in the case of a drug that has been found to have two antagonistic actions on the isolated frog's heart, as to whether its dosage can be so controlled as to bring out the one action which, occurring alone, would be beneficial, without at the same time exhibiting the antagonistic effect which would not be beneficial, but might even be harmful.

This twofold and antagonistic action of digitalis on the heart of the frog, which pharmacologists have shown to be both a stimulation of the vagus center and a direct action on the heart muscle, must therefore be investigated clinically to determine as far as possible its applicability to the human heart. If it is found that the same effects are produced on patients, it must also be determined whether and in what cardiac conditions the combined antagonistic effects produce favorable results. Let us consider first the question of vagus stimulation by digitalis when administered to patients.

EFFECT OF DIGITALIS ON VAGUS NERVES

The rhythmicity inherent in heart muscle, which causes contractions to recur after short periods of rest, is greatest at the sinus area near the mouth of the great veins. It is here that the contraction waves start, therefore, and thus it is that this area is called the pacemaker. Now, this inherent rhythmicity would drive the heart at a much faster rate were it not for the vagus nerves, which depress rhythmicity and thus hold the heart somewhat in check. This vagus control is exercised, of course, at the pacemaker in large degree; and vagus stimulation, therefore, will find its expression here in a depression of rhythmicity and a consequent slowing of rate. This has been shown by Robinson and others to occur in human beings when the vagus is stimulated by digital pressure applied in the neck.

But this is not the only action of the vagus on the heart. As the contraction wave spreads from the sinus area over the auricle to the ventricle, it is conducted to the ventricle along a bundle of specialized tissue, the auriculoventricular bundle, or the bundle of His. If the conductivity of this pathway is sufficiently interfered with, the impulse to contraction will be delayed or it may even not reach the ventricle. Here, again, the action of the vagus is manifested. Vagus stimulation by pressure may be shown by the electrocardiograph so to depress the conductivity of the auriculoventricular bundle as even to block completely the passage of the impulse from auricle to ventricle. It may be mentioned in passing that it seems probable that the right vagus is largely responsible for the slowing effect at the sinus, while the left vagus exercises the greater influence in depressing conduction.

It has long been recognized that digitalis does produce vagus stimulation in the human subject. The important fact is that this stimulation produces effects by its depression of auriculoventricular conduction that are far more striking than any effect at the pacemaker. It is in this depression of conduction between auricle and ventricle that digitalis affords its most dependable and remarkable effect to benefit patients. Whatever may be said of other effects, there is unanimity of opinion here.

The clinical condition in which advantage is taken of this depression of conduction by digitalis with such

* Read before the Central Illinois District Medical Association, Oct. 26, 1920.

1. Cushny: A Text-Book of Pharmacology and Therapeutics, Ed. 4, Philadelphia, Lea Brothers & Co., 1906.

striking results is, of course, cardiac decompensation with auricular fibrillation. In this condition, with auricular fibrils contracting independently and sending down myriads of impulses to a distressed and overworked ventricle, the latter cannot find sufficient rest. By depressing conduction, digitalis blocks off a number of these crowded and irregular impulses and thus allows the ventricle time to rest. There is no more pronounced and striking result in medicine than the rapid improvement in comfort of a patient with decompensation attending auricular fibrillation with rapid heart rate, after a large dose or two of digitalis. The improvement in signs is no less remarkable. A heart that was working so hurriedly that many beats were too weak to cause a radial pulse becomes, ofttimes within a few hours, so much improved that few if any of its contractions fail to give a radial response. Digitalis here, let it be remembered, gives its beneficent result, not because of any stimulating effect on the heart, but rather, as Lewis [2] says, because it is a heart sedative. It helps the heart to rest. In auricular flutter, also, digitalis is practically specific, by the same action in depressing conduction and blocking off from the ventricle the too frequent impulses arising in the auricle.

In cases exhibiting a normal rhythm with evidences at the same time of injury to the auriculoventricular bundle, the drug should be used cautiously, if at all, because of the liability of inducing heart block. While the production of complete block by digitalis in most instances is of no particular consequence, it must be remembered that the period of transition to complete block might be attended by serious consequences. The probability of such an outcome is so small, however, that it would not deter us from administering the drug in such cases, provided any advantage from its action directly on the muscle were at all probable. This phase of the question of digitalis action will be discussed later. Here it may be said that no benefit certainly can be expected from any further depression of auriculoventricular conduction in such cases, in which the ventricle is not receiving too frequent impulses from the auricle.

Opinion is not divided, then, on the question of the effect of digitalis in depressing conduction and in thus benefiting cases with auricular fibrillation that show a rapid rate. As to the other vagus action described by pharmacologists, namely, a lowering of rate by action at the sinus area, opinion is not so unanimous with regard to its action clinically. Various clinicians [3] have reported heart slowing of sinus origin after digitalis administration, but few figures showing the amount of this slowing after the effect of rest is eliminated are given. Other observers [4] find little evidence of any slowing effect in patients with normal mechanism that do not show spontaneous changes in rate when not under digitalis. Of the ability of digitalis to slow the heart rate of man through any stimulation of the vagus at the pacemaker, when administered in therapeutic doses, little more can be said, then, than that there is no such general agreement as there is in regard to its action in auricular fibrillation (and flutter) in depressing auriculoventricular conduction.

2. Lewis, Thomas: On Cardinal Principles in Cardiological Practice, Brit. M. J. **2**: 621 (Nov. 15) 1919.

3. Christian, H. A.: Digitalis Therapy: Satisfactory Effects in Cardiac Cases with Regular Pulse Rate, Am. J. M. Sc. **157**: 593 (May) 1919. West, H. F., and Pratt, J. H.: Clinical Experience with a Standardized Dried Aqueous Extract of Digitalis, J. A. M. A. **75**: 77 (July 10) 1920. Eggleston, Cary: Digitalis Dosage, Arch. Int. Med. **16**: 1 (July) 1915.

4. Lewis (Footnote 2). Cohn, A. E.: Clinical and Electrocardiographic Studies on the Action of Digitalis, J. A. M. A. **65**: 1527 (Oct. 30) 1915.

EFFECT ON HEART MUSCLE

Let us now turn to the other effect that has been described by pharmacologists, i. e., the effect of digitalis on the muscle. The question of its action on the human heart muscle, when given in therapeutic doses, is still the subject of much speculation and investigation. That it has some effect on the heart muscle when so administered there appears to be little doubt. Cohn, Frazer and Jamison [5] described in 1915 the changes in the T-wave of the electrocardiogram which occur under digitalis administration and disappear after its discontinuance. These changes are now generally ascribed to an action of the drug on the heart muscle, but the exact nature of its action and the results of it are not clear. Cohn and his co-workers believe that it indicates a prolongation of muscular activity at the apex of the heart. This would be in line with former conclusions arrived at from observations on the heart of the frog. But the important question clinically is: Does such action, if it occurs, result in increased cardiac efficiency? And to this question there is no very satisfactory answer. In reporting the results of giving digitalis to cardiac patients in whom fibrillation of the auricles was not present, various clinicians [3] have reported clinical improvement of more or less definiteness. Others [6] do not share this opinion of the value of digitalis in cases of decompensation without fibrillation, and hold either that no improvement should be expected in such cases or that at best improvement can only be rather vaguely hoped for. None of these other cases certainly have shown as rapid and conclusive evidence of improvement, either in symptoms or in physical signs, as commonly occurs in cases showing auricular fibrillation under digitalis therapy.

Cohn and Levy [7] have recently reported that the output of the heart under digitalis was increased in most of their experiments on dogs, but that it was diminished in the case of cat experiments. The question of the effect of digitalis on the output of the human heart must remain for the present an open one. The same thing, it seems to me, must be said in regard to the question of benefit from digitalis therapy in cases of decompensation exhibiting a normal cardiac mechanism.

There is likewise some difference of opinion as to the effect of digitalis on blood pressure. The prevailing view is that the drug in therapeutic doses has no appreciable effect primarily on blood pressure and that any effects that occur are secondary, resulting from its cardiac action. High pressure, then, appears to be no contraindication to its administration.

The same in general may be said of its diuretic action. Most observers regard such effects as secondary. It may be expected to increase the output of urine in those cases in which it improves the circulation.

The effects of the drug need to be studied more exactly in nonfibrillating cases. Careful records of pulse, respiration, urine output, vital capacity, symptoms, electrocardiographic findings, etc., taken when the patient first comes under observation, should be compared with similar records made after a period of rest in bed. Then digitalis should be administered in standard fashion without any change in other treat-

5. Cohn, Frazer and Jamison: The Influence of Digitalis on the T-Wave of the Human Electrocardiogram, J. Exper. Med. **21**: 593 (June) 1915.

6. Lewis, Thomas (Footnote 2). Wilson, F. N.: Diagnosis of Chronic Myocarditis, J. Missouri M. A. **17**: 403 (Oct.) 1920.

7. Cohn, A. E., and Levy, R. L.: Effect of Therapeutic Doses of Digitalis on the Contraction of Heart Muscles, abstr. J. A. M. A. **74**: 1597 (June 5) 1920.

ment. Any changes following this could reasonably be attributed to the drug. Each case must be studied exactly, and our conclusions not formed merely from impressions.

SUMMARY

It may be said that digitalis stimulates the vagus when administered clinically: that this stimulation affects chiefly conductivity, and that by blocking off from the ventricle many impulses to contraction in cases of decompensation showing auricular fibrillation (or flutter), it protects the ventricle and allows it to rest and restore its efficiency.[8] It may be said further that while it has been shown that digitalis has an effect on the heart muscle, the exact nature of this effect is not known, and that there is at present difference of opinion as to whether there is any benefit to be derived from administering the drug to patients showing a normal mechanism. In most such cases, indeed, there appears to be no contraindication to its use; but its well known effect in causing premature contractions should be kept in mind. While these, of course, are usually disregarded, it is nevertheless possible that in a case showing a marked tendency toward premature ventricular contractions the effect of large doses of digitalis might be just enough to produce ventricular fibrillation, which indeed is described by pharmacologists as the end-result of an overdose.

In administering digitalis, a consideration of the proper dosage is important. In recent years much larger doses have been given than were formerly employed. It has long been asserted that smaller doses have a tonic effect on heart muscle; but, as was just said, there is no very conclusive evidence that digitalis in any dosage increases the tone of the human heart. In auricular fibrillation, however, in which the effect of the drug can be rather accurately measured, definite ideas as to dosage have been arrived at. The method worked out by Eggleston[9] is now in general use when one is giving the drug under conditions that allow careful and frequent observation of results. Under this method the preparation to be used is standardized in terms of cat units, and the dose of this standardized preparation is made proportional to the weight of the patient. The dose of an average tincture, determined in this way, will be about 15 c.c. per hundred pounds. That is to say, a man weighing 150 pounds would receive 22.5 c.c., or about 5½ drams, of such an average tincture. This may be given at one dose, or better over a period of twelve or eighteen hours. In this way the patient gets quickly the full effect of the drug.

In giving such "massive" doses to patients showing auricular fibrillation and following the results by frequent counting of ventricular and pulse rates, Robinson[10] found that effects begin to manifest themselves within two to five hours after administration, and reach their maximum result sometimes within six hours, but oftenest within from fifteen to twenty-six hours. His results, as well as those of Eggleston and others, indicate that the tincture is usually well absorbed from the alimentary canal and is a satisfactory preparation for administration.

Such "massive" doses cannot, of course, be frequently repeated, nor is it necessary that this be done. The effects persist for a variable time, Robinson finding that the full effect in his cases persisted for from four to fifteen days. Partial effects last a longer time, and it is usually unsafe to give a full massive dose unless one is sure that the patient has not had digitalis for three weeks.

While it is unwise to give such large doses unless the effect can be frequently observed, still their employment with such striking results indicates that dosage has been too small and that better results will be obtained, in cases in which the drug is indicated, under proper dosage.

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8. Opinion is not unanimous that this depression of auriculoventricular conduction is wholly due to vagus stimulation. It may be due in part to a direct action on the connecting tissues.

9. Eggleston, Cary (Footnote 3).

10. Robinson, G. C.: The Rapidity and Persistence of the Action of Digitalis on Hearts Showing Auricular Fibrillation, Am. J. M. Sc. 159: 1121 (Jan.) 1920.

POSTERIOR SINUS INFECTION WITH OPTIC NERVE INVOLVEMENT

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While some cases have been reported of optic nerve disease secondary to infection of the anterior group of sinuses, it cannot be said that infection of the posterior sinuses was not present in the cases reported. Infection of the anterior group of sinuses could, of course, cause an optic neuritis of toxic type by invasion through the blood stream, just as readily as the posterior group of sinuses or any focal infection. In the discussion of this subject, only the posterior group of sinuses will be considered.

Anatomically, there is every reason why posterior sinus disease should cause optic nerve disease. Posterior sinus disease, acute and chronic, forms a large part of the specialist's practice. Optic nerve disease he sees but rarely. When one considers the intimate relationship of these parts, he is at a loss to explain the rarity of optic nerve disease in posterior sinus infection.

The bony partition separating the ethmoidal cells and the sphenoidal sinus from the orbit and optic canal is thin, and the periosteum on either side is connected with numerous diploic veins. The periosteum in the optic canal is inseparable from the sheath of the optic nerve. In some cases there is an absence of bony wall between the optic nerve and the sphenoidal sinus or the ethmoidal cells, or both. The intimate circulation of these parts readily explains the ease with which direct invasion may occur. The ophthalmic artery and vein and their branches supply and drain the sinuses and the orbit. The nerve head is supplied and drained by a network of arteries and veins which form an integral part of the sinus circulation. The intracanalicular section of the nerve is supplied by small muscular branches of the ophthalmic artery and is drained by the vein of Vossius, which in turn drains into the cavernous sinus. Numerous veins from the periosteum of the posterior orbit and the periosteum of the posterior ethmoidal cells and sphenoidal sinus flow into the vein of Vossius. The lymphatic circulation between the posterior sinuses and the posterior orbital structures forms a network of communication.

Orbital cellulitis, secondary to a posterior sinus infection with or without optic disease, is a different pathologic picture from the class of cases under discussion. I wish to consider only those cases in which the optic nerve is involved as a result of invasion of infection from the posterior sinus group. The intracanalicular portion of the nerve is primarily involved, and the nerve head changes are secondary. The exact

method of involvement has been the object of a great deal of discussion. A swollen nerve within the bony canal would cause stasis and consequent nerve head changes. That we may have a toxic neuritis from blood stream invasion is also readily acceptable. In some cases the primary trouble is undoubtedly posterior to the canal, but these cases ought to be classed as meningeal. Cases in the last group are usually fatal, and the optic neuritis is a small part of the pathologic picture.

REPORT OF CASES

CASE 1.—Mrs. C., aged 33, referred to me, March 23, 1920, by Dr. H., an ophthalmologist, had a severe attack of grip, six years before, at which time she had trouble with her nose. After this the nose was not so free as formerly, and she had a great deal of discharge from both sides, although the right side was more troublesome. Since that time she had seemed to have a constant cold in the head. She had had a great deal of frontal headache. Six weeks before I saw her she began to feel ill, with increased headache. Four weeks before, she noticed what she called double vision, which continued for one week. Since this time she had not been able to see to read or sew. With this visual disturbance, severe pain in the head had been continuous ever since. She had not been conscious of a cold in the head, and there had been no fever. The ophthalmologist reported a partial obliteration of both disks, and markedly contracted visual fields on both sides.

Examination of the nose revealed a fairly normal septum. The left middle turbinate was swollen and the anterior ethmoidal cells were covered with pus. The anterior cells showed marked infiltration. The frontal sinus and the antrum were not involved. The right side anteriorly presented no evidence of infection. Postnasal examination revealed a mucopurulent discharge from both sides. The mucous membrane of the nasopharynx and oropharynx was infected. The examination of the ears disclosed no pathologic condition of note. March 25, under general anesthesia, a complete exenteration of the anterior and posterior ethmoidal cells of both sides was performed, and both sphenoidal sinuses were thoroughly opened. The anterior and posterior ethmoidal cells of the left side were found to be in the late stage of infection, the entire ethmoidal capsule being broken down and filled with pus, and cell proliferation was marked. The sphenoidal sinus contained pus and polypi. The anterior ethmoidal cells on the right side contained no pus, but cell proliferation was present. The posterior cells contained pus, and cell proliferation was present. The sphenoidal sinus contained pus. On the third day following the operation, the patient was able to read the newspaper. Previous to the operation she was unable to read even large print. The headache and scalp soreness were entirely relieved by the second day. The patient left the hospital in ten days and was able to return to her home some distance from the city. The patient was seen at intervals for postoperative local treatment. July 20, she reported that she had had no headache and that her eyesight was good. I last saw her September 21, after a period of two months. The nasal condition was satisfactory. She reported that she had been perfectly well and attending to her usual household duties. She considered her eyesight to be as acute as it had ever been. She was reading constantly and sewing daily. The ophthalmologist saw her in April and at that time the optic nerve and visual fields on both sides were apparently normal. The ophthalmologist again reported on his examination of July 20, which was that the eyes had returned to normal and that it was not necessary for the patient to see him again.

CASE 2.—Miss E., aged 19, referred to me, April 29, 1918, by Dr. B., an ophthalmologist, gave no history of previous ill health. She had not been subjects to colds in the head or headaches. April 6, she complained of pain over the left eye. The pain continued for two days. Immediately following this she noticed that she could not see well with the left eye. The diminution in vision becoming more marked, she was fitted for glasses without any improvement in the sight of the left eye. April 26, she was examined by Dr. B., who found an optic neuritis of the left side, with blindness. April 29, there was complete obstruction of the left side of the nose. The inferior turbinate was in contact with the septum, and the middle turbinate filled the middle meatus. The mucous membrane was red and swollen, but no discharge of pus was seen anteriorly. The right side of the nose was normal. Postnasal examination detected no discharge of pus at the time, and the mucous membrane of the nasopharynx showed no evidence of infection. The posterior end of the middle turbinate, however, was red and swollen. A diagnosis of a closed infection was made. On this date, under local anesthesia, I removed the left middle turbinate, opened the frontal sinus, removed the ethmoidal cells and opened the sphenoidal sinus. Operation revealed a great deal of cell proliferation and polypoid degeneration of the ethmoidal capsule. The sphenoidal sinus showed swelling of the mucous membrane and considerable mucoid fluid. The ophthalmologist reported that the optic neuritis showed improvement immediately after the operation, and completely resolved in about two weeks with no atrophy. Restoration of vision was perfect. In response to a note, the patient called at my office, October 25. The nasal condition was satisfactory, and the patient was not conscious of any disturbance whatever. The vision in the left eye was perfect.

CASE 3.—Mrs. T., aged 35, referred to me by Dr. H., an ophthalmologist, April 20, 1920, had had hay-fever every summer for six years, and had been subject to colds in the head. Four years before she had had influenza, since which time she had had frontal headaches constantly. Some time after the influenza she noticed dulness of vision, which gradually became worse. In November, 1919, she found that she was unable to see anything with the right eye. The headaches continued and the vision of the left eye was so bad that she was not able to go about alone, as she was afraid to cross the street. Her family physician reported that he had made a thorough examination of the patient when she consulted him some time in November, 1919. The Wassermann test was negative, and aside from a pathologic condition in the pelvis he could find nothing requiring treatment. Although the Wassermann test was negative and there was no clinical evidence of syphilis, he put her on antisyphilitic treatment. As the blindness in the right eye continued and the vision in the left eye was diminishing, he referred her to the ophthalmologist, who discovered complete atrophy of the right optic nerve and blindness. The left visual field was contracted and the left optic nerve showed neuritis. The picture presented a slowly progressive nerve head change.

Examination of the nose revealed the septum deviated to the left. The left side showed no gross evidence of anterior sinus involvement. The left middle turbinate filled the middle meatus. The right side showed the same condition. The postnasal examination disclosed no active discharge at the time of examination, but the nasopharynx and oropharynx mucous membrane was chronically inflamed, suggesting postnasal discharge. Examination of the ears presented nothing of pathologic significance. In view of complete loss of vision of the right, and increasing diminution of that of the left eye, it was deemed advisable to eliminate the sinuses as a possible source of trouble, though it was evident that the sinus infection that had precipitated the neuritis was quiescent.

April 26, under general anesthesia, the complete operation was performed on both sides. The ethmoidal cells were removed and the sphenoidal sinuses well opened. The posterior ethmoidal cells of both sides contained no demonstrable free pus, but there was cell proliferation. The sphenoidal sinuses contained mucopurulent fluid, and the mucous membrane showed polypoid degeneration. The patient left the hospital at the end of one week and was subsequently treated at the office. After the operation the headaches greatly improved, but did not entirely subside for about three weeks.

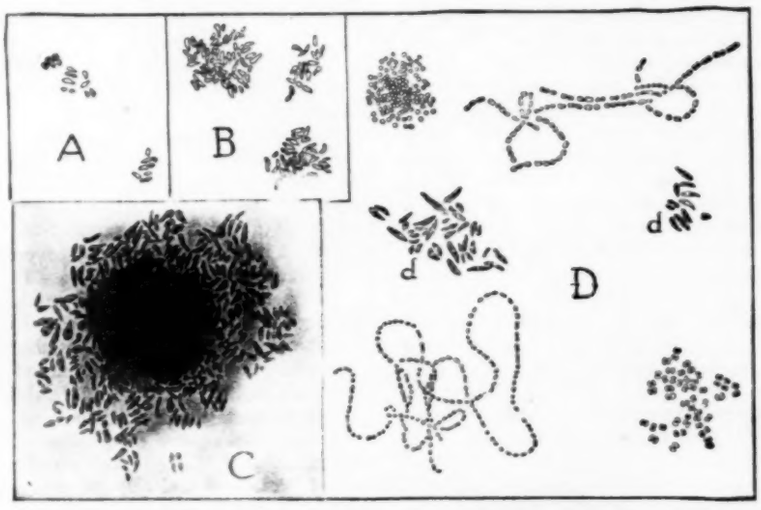
June 5, the ophthalmologist reported that there was some improvement in the vision of the left eye. July 20, the condition was unchanged. The patient was not seen again until September 18, at which time the nasal condition was satisfactory and the patient was most concerned with some pelvic symptoms. She was referred to her family physician. The hay-fever did not disturb her the last summer, though she had had some stinging in the eyes.

The report of the ophthalmologist, September 20, stated that there was no further change in the left optic nerve. There was no evidence of progressive trouble. He was certain from his examination that the optic neuritis had entirely subsided, and that the visual changes, while permanent, would not become any more marked.

COMMENT

These cases present a striking contrast for our consideration. In Case 1, the patient was seen during the acute stage of the optic nerve involvement. Prompt operative treatment gave immediate relief. The subsidence of the neuritis was almost immediate, reading vision returning on the third day. This was followed by apparently no change, which again was followed by a period of gradual improvement in the nerve and a complete recovery. In this case we had an active and progressive sinus infection and an active and progressive neuritis. This case is typical of the cases belonging to this group.

The second patient was operated on early. Disturbance of vision was first noticed, April 8, and operation was performed, April 29. Subsidence of the optic neuritis with complete restoration of vision promptly followed the operative procedure. This patient had an acute sinus infection of short duration which had produced a swelling of the canalicular portion of the nerve with the resulting pressure. The acute sinus infection had entirely subsided, but there had remained sufficient induration within the ethmoidal capsule to continue the obstruction of the circulation and the edema of the canalicular portion of the nerve. Operation relieved this at once. Without operation, complete atrophy of the optic nerve would have been the inevitable sequence.



A, colonies of B. diphtheriae 4 hours old; *B*, colonies of B. diphtheriae 5 hours old; *C*, colony of B. diphtheriae 8 hours old; *D*, colonies from the throat showing colonies of various bacteria; *d*, *d*, diphtheria colonies.

Case 3 presented an entirely different picture. The acute sinus attack and the acute optic neuritis had occurred possibly two years previous to the date of my first examination. Total blindness of the right eye was noticed six months previous to my first examination. It is probable that the acute attack involved the two nerves at the same time and that the right side was sufficiently severe to cause atrophy quickly, while the left side was more slowly undergoing atrophy. The examination disclosed no active sinus infection, but the left optic nerve showed signs of a progressive neuritis. In view of this, the operative procedure was considered the only possible chance of saving the left eye. That our judgment was justified was shown by the gradual subsidence of all activity in the left nerve. We were late in this case, but we saved what there was left to save. It is a fair assumption that we could have had as satisfactory a result in the third case as in Cases 1 and 2 if the patient had been seen sufficiently early.

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Clinical Notes, Suggestions, and New Instruments

A RAPID CULTURAL METHOD OF DIAGNOSING DIPHTHERIA *

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In cases of suspected diphtheria it is important to know at the earliest possible moment whether or not the Klebs-Loeffler bacillus is present. The usual cultural methods require from twelve to eighteen hours. A stain made directly from the swab gives presumptive evidence immediately, but has never been considered reliable by bacteriologists.

The senior author has been impressed with the possibilities of his "little plate" method, which was described first for counting bacteria in milk[1] and later for studying bacteria in general,[2] as a means of identifying bacteria. The present paper shows the possibilities of the method in diagnosing diphtheria. Briefly stated, it consists in rubbing the infected swab over a small area of a flamed glass slide, adding a drop of the medium, spreading it to form a "little plate culture" which is then incubated about five hours, dried, and stained to bring out the little colonies of *B. diphtheriae*. The details of the method were developed and the routine work reported here was performed by the junior authors as subjects for theses.

MEDIUM

A simple medium that has proved satisfactory is an agar, milk and serum medium. Ordinary nutrient agar, from 1 to 1.5 per cent., with a reaction of + 1 is prepared, tubed (from 1 to 3 c.c.) and sterilized in the usual manner. The milk is sterilized in tubes containing from 1 to 3 c.c. in the autoclave or, better, by the intermittent process. It is necessary to have well separated milk, as the presence of fat globules is likely to deform the colonies. Serum water is prepared by mixing one part of serum (such as sheep, beef, horse or rabbit) with three parts of distilled water, tubing (from 1 to 3 c.c.), and sterilizing it in the autoclave.

METHOD

Making Swab.—The usual cotton probang is used to swab the throat or nose.

Making Plates.—A tube of nutrient agar is melted and placed in a water bath at from 45 to 50 C., which also contains tubes of sterile milk and sterile serum water. When the temperatures of all three tubes are about the same, the serum water and milk are poured into the tube of agar, and all are well mixed by shaking or rolling the tube. This tube is then kept at 45 C. or a little higher during the rest of the procedure to prevent the agar from solidifying.

A microscopic glass slide is sterilized in the flame and then placed on the working table. When cool, the swab is rubbed over an area about 1 square millimeter in diameter. Two

* From the Agricultural Bacteriology Laboratories, University of Wisconsin, Madison.

1. Frost, W. D.: A Rapid Method of Counting Living Bacteria in Milk and Other Richly Seeded Materials, J. A. M. A. **66**: 889 (March 18) 1916.

2. Frost, W. D.: A New Method for the Study of Bacteria, J. A. M. A. **72**: 343 (Feb. 1) 1919.

drops (about 1/20 c.c.) of the culture medium at from 45 to 50 C. are placed on the slide, one near or on the smear and the other a little distance away. With a sterile loop the first drop of medium is thoroughly mixed with the material of the smear and spread in a thin film. This makes a small or "little plate" culture. Without sterilization the loop is carried over into the second drop which is likewise spread about. The last plate culture has the micro-organisms from the throat much diluted. The slide, with its double plate culture, is immediately put into a moist chamber.

When the swabs are dry it is desirable to moisten them by adding a few drops of a sterile physiologic sodium chlorid solution or by putting a drop of the same solution on the slide and rubbing the swab in it.

Only rarely is the first plate too heavily seeded, and in practice it is usual to rub the swab on the slide for a second time, making the second plate a duplicate rather than an attenuated one. In certain cases and when the little plates are made immediately after swabing the throat, the diluted plate is necessary.

Incubation.—Immediately after making, the little plates should be put in a moist chamber where they are to be kept until the colonies grow to sufficient size to be examined. For a few slides, and as a makeshift, they may be put in Petri dishes, the bottoms of which are covered with wet filter paper, and on glass rods, which will keep them from getting wet. It is much more convenient, however, to have a "moist chamber cabinet," and when a large number of slides are used, it is quite necessary. Such a cabinet is on the market.[3] Whatever the form of the moist chamber, it is put in the incubator at 37.5 C. for about five hours.

Treatment After Incubation.—When the slides are taken from the incubator they are rapidly dried. This is best done by placing them on a metal surface heated by steam (temperature from 90 to 100 C.). This takes about five minutes, as the "little plates" must be perfectly dry to prevent them from cracking or peeling off.

Staining.—These dried plates may then be further fixed by passing them three times through the gas flame in the usual way. While they are still hot they are immersed in a 10 per cent. solution of glacial acetic acid in 95 per cent. alcohol for one minute or more. From the acetic acid solution they are put directly into a staining jar containing Loeffler's methylene blue, diluted with distilled water to five times its volume. They are left in the stain from five to ten minutes and are then washed in water and dried either in the air or over the steam heated plate. The stain works best after it has been used several times, and may be used over and over again until its action becomes too slow.

Observation.—The slides are examined microscopically in the usual way. A mounting medium and a cover glass may be applied, but they are not necessary. The oil immersion objective is used by putting the oil directly on the dried agar. A strong artificial light is most satisfactory. A mechanical stage is also desirable so that the field can be observed systematically.

THE COLONY OF B. DIPHTHERIAE

The young colonies show the form of the individual cells, as well as their arrangement in relation to one another. The diphtheria colony about five hours old is quite distinctive. The cells exhibit the usual bizarre shapes characteristic of this organism. They are usually clubbed and take the stain unevenly, giving the well known pictures. In addition to this, the relation of the individuals to one another is also characteristic.

The parallel and angular arrangements of the bacilli occur so generally that they may be considered diagnostic. Hill has offered explanation of this arrangement in what he terms "postfission snapping." Our own observations would lead us to accept his conclusions.

PRACTICAL TESTS

Examination of Unknown Cultures.—Swabs have been impregnated with cultures of *B. diphtheriae*, staphylococci, *B. coli* and mixtures of the three, and so marked that their contents were unknown at the time of making the "little plate" cultures. In this way the possibilities of the method were tested out. As was expected, there was no difficulty in always identifying the cultures containing the Klebs-Loeffler bacillus.

Examination of Swabs from Supposedly Normal Throats.—In order to assure ourselves that there were not organisms in normal throats that would form colonies which would be confused with those from the diphtheria cultures, an examination was made of a considerable number of swabs from the throats of well persons. Colonies of many different kinds were found. Diplococci, streptococci and staphylococci were common. Rod-shaped organisms were frequently found, but in all cases their colonial structure was quite different from that of the diphtheria bacillus.

Examination of Swabs from Suspected Throats.—A considerable number of swabs have been examined parallel with routine examinations in the state hygienic laboratory. After the swabs had been rubbed over the serum slopes they were handed over to one of us. Cultures from them were made by the "little plate" method, as described above. After five hours' growth they were dried down and then stained, sometimes immediately and sometimes later.

We are all convinced that we can make a diagnosis with as much certainty by this method as by the regular method, and in from one third to one half of the time.

3. Made by the Central Scientific Company, Chicago.

ABSENCE OF VAGINA; UNILATERAL DEVELOPMENT OF INTERNAL GENITAL ORGANS; HEMATOMETRA

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History.—Mrs. A. B., aged 46, Hungarian, a woman of medium height, heavily built and weighing 162 pounds, was seized suddenly with abdominal cramps, such as she had never had before, two weeks before I saw her. She had been in this country the greater part of her life, and had always been obliged to work. While she maintained her home she had been employed outside as cook. She was unusually strong and was not fatigued by a day's work. She had been married sixteen years, and for all that time had lived happily with her husband. When seized with the cramps, she was unable to work, and after a few days was taken to a hospital in Portchester, N. Y. There she was told that she had an abdominal tumor and would require an operation. She then returned to New York. Aug. 4, 1920, I was asked to see her.

Examination.—At that time, the patient was not suffering much, but stated that her pains had been very severe and intermittent. The temperature and pulse were normal. Abdominal palpation evoked some pain. Certain areas were more tender than others. There was no distinct mass to be felt anywhere. Inquiry into her menstrual history revealed the fact that she had never menstruated in her life, nor could she remember ever having had periodic pains corresponding to a menstrual epoch. She first refused to submit to a vaginal examination, but after some argument I obtained her consent. "But," she said, "you cannot examine anyhow, because you cannot get your finger in." This statement I found correct, as there was a total absence of the vagina. A dense flush wall of tissue completely closed the ostium vaginae. The external genitals were otherwise normal. By rectum, neither uterus nor cervix could be felt. Next day the patient was admitted to the Sydenham Hospital for observation. Her pains became severe and intermittent, the abdominal wall was rigid, and she vomited twice. The urine and the blood count were normal. Although the indication for operative interference was at no time clearly defined, we felt reasonably sure that she was suffering from hematometra.

Findings at Operation.—The patient was operated on, August 7. A long median incision was made, exposing an enormous cystic tumor completely filling the abdominal cavity. The mass filled the pelvis and the lateral walls of the abdomen, and crowded the stomach and liver. The tumor was so tense that an examination of its attachments could not then be

made. Being certain of its fluid content, I inserted a large trocar and cannula and emptied the tumor of large quantities of a pale, sanguineous, amber-colored fluid. There were innumerable shining particles floating in the fluid which proved to be cholesterin. After the fluid had been emptied, the collapsed bag was found to be slightly thicker at its pelvic portion, where it found attachment to the left broad ligament. There was no attachment anywhere else in the pelvis. The sac was ligated at the left broad ligament and removed. The patient made an uneventful recovery.

Examination of the sac revealed at the point of attachment a considerably thickened wall. Along the outer side of the sac was a well developed but flattened out fallopian tube adherent to the sac. There was no distinct ovarian body, but below the site of the fallopian tube were small masses of ovarian tissue spread out on the sac wall. The cyst wall, which represented an attenuated uterine body, was one-sixteenth inch in thickness, except close to its attachment, where it was five times as thick, terminating in a somewhat conical mass of dense fibrous tissue, which was undeveloped cervix. Unstriped muscle fibers were found in the wall of the tumor. Examination of the pelvis revealed not the slightest evidence of vagina. The relation of the bladder and rectum was identical with that found in the male pelvis. There was no suggestion of a broad ligament tube or ovary on the right side.

COMMENT

This case is one of hematometra in which the right side of the embryonic structures failed to develop. Embryologically, the ovary is formed by an infolding process of a portion of the wolffian body. The fallopian tube is formed from the upper portion of the duct of Müller. The lower portions of these two bodies unite to form the genital cord. The genital cords from the right and left sides approach each other and eventually coalesce to form the uterus and vagina. Evidently, what occurred in this case was an arrest of development of the genital cord on the right side. Consequently, no coalescence was possible with its fellow of the opposite side, and no vagina was formed. The genital cord on the left side succeeded so far as to develop a closed body which perhaps could have performed its function as a uterus, a complete fallopian tube, and an incomplete ovary. Unfortunately, no search was made for evidence of male sex organs on the right side.

So far as I have been able to find, there has been no case recorded in the literature in which a unilateral development of the uterus tube and ovary has occurred with absence of vagina and the gradual development of hematometra.

35 West Eighty-First Street.

REPORT OF A CASE OF ROUND CELL SARCOMA OF THE EPIPHARYNX AND A CASE OF PRIMARY DIPHTHERIA OF THE MIDDLE EAR

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ROUND CELL SARCOMA OF EPIPHARYNX

R. A., a girl, aged 8 years, who came under my care, Oct. 25, 1919, had breathed through the mouth and had had frequent attacks of sore throat for three years. Tonsillectomy had been performed and the removal of so-called adenoids had been attempted in December, 1918, in a hospital in another state. No improvement followed this operation, so far as the breathing was concerned. The child was undernourished, with marked anemia, was very small for her age, and had a typical adenoid facies. The epipharynx was filled with a soft growth with two hard, round fibrous masses attached to its lower part. The hard mass on the left side projected into the posterior naris. The whole right nasal cavity was filled with a soft growth which projected from the right anterior naris. Free bleeding followed examination of this growth. October 27, at Muhlenberg Hospital, I removed first the hard fibrous mass on the left, and then the one on the right side. After the removal of these bodies the attachment of the main growth to the vault of the pharynx was severed and the growth removed through the nose. Figure 1 is a diagram of the growth in situ. Figure 2 is a drawing of the growth after its removal. Moderate bleeding followed the operation, but was controlled by pressure. The pathologist reported that the specimen was a round cell sarcoma. Immediate relief followed the operation, and the patient rapidly improved in general health. She had a good appetite, rested well at night, and acted as a normal child should. When I saw her, May 20, 1920, there had not been any return of the disease condition.

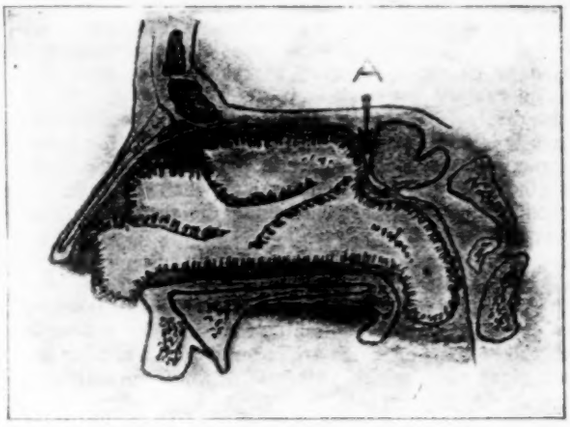

Fig. 1.—Round cell sarcoma of epipharynx: *A*, attachment.

PRIMARY DIPHTHERIA OF THE MIDDLE EAR

Feb. 8, 1920, I saw Baby Y. in the children's ward. She had just passed through a severe attack of bronchopneumonia, and for three days there had been a free, purulent discharge from a large perforation in the left tympanic membrane. A culture taken from this discharge disclosed a positive diphtheria infection. A culture from the throat at the same time was negative. Diphtheria antitoxin was administered at once. February 10, a slight film of false membrane appeared on the tonsils, and a culture from this membrane was positive for the diphtheria bacillus.

Fig. 2.—Growth after removal. Outlines indicate convolutions of mass. Arrow points to area of attachment. The mass measured 4 by 1.5 by 1.5 cm.

Cultures taken from the throat were negative in ten days, but it was about five weeks before cultures from the ear were free from the infecting organism, notwithstanding the fact that all efforts were used to cause the cessation of the discharge. These efforts included the removal of a medium amount of adenoid tissue that was present.

514 Central Avenue.

Metastasis of Cancer.—Cancer, so far as our present knowledge of it goes, is a unicentric disease; at first located in a particular tissue, it tends inevitably to break bounds and to metastasize in other tissues. Different varieties of breast cancer have varying metastasizing speeds—some, such as the atrophic scirrhus of the elderly woman, break bounds very slowly, while the medullary cancer of the lactating breast spreads so rapidly as to be practically hopeless at the start. In between these two relatively infrequent extremes we have several other types, of all of which it may, I think, with safety be said that metastasis is likely to have taken place within six months of the first appearance of the lump in the breast.—W. Doolin, *Med. Press*, April 28, 1920.

Special Article

This series of articles dealing with serums, vaccines and nonspecific therapy has been prepared under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association. The Council is constantly passing on products of this kind, marketed by various pharmaceutic houses, and it accepts for New and Nonofficial Remedies only those which are (1) *licensed for interstate sale by the federal government, and* (2) *those which do not conflict with the Council's rules.*

The subject of immunity, besides being relatively new, is beset with complexities. The agents often employed in the therapy of acute infections are complex biologic products; the literature concerning the efficiency of many of these agents presents a mass of conflictng evidence. These facts render judgment and decision difficult. It was for these reasons that it was deemed wise to submit to the Council and to the profession at large concise, authoritative statements concerning indications and contraindications, methods of administration, dosage, the value and also the possible dangers of serums, vaccines and nonspecific proteins in the treatment of various infectious diseases. Accordingly, a committee was appointed by the chairman of the Council consisting of the three members of the Council whose names are signed to this preliminary note.

This committee enlisted the aid of authorities in the three fields of immunity represented and placed before them the desires of the Council with the request that they assume full responsibility, first, for the selection of men for the presentation of each subject, and secondly, for the revision and editing of the articles presented. Dr. Simon Flexner assumed responsibility for the series on serum therapy, Col. F. F. Russell for the series on vaccine therapy, and Dr. Joseph L. Miller for those on nonspecific protein therapy. Before publicaton was authorized, each series was made the subject of a conference between the committee and those who were responsible for its preparation.

These articles are presented to the profession to serve as a guide in the use of serums, vaccines and nonspecific proteins.

L. G. ROWNTREE, G. W. MCCOY,
WARFIELD LONGCOPE.

BIOLOGIC THERAPY

GENERAL CONSIDERATIONS REGARDING SERUM AND VACCINE THERAPY

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NEW YORK

The serum treatment of disease dates from the discovery and application of diphtheria antitoxin by Behring and Roux, and the use of bacterial vaccines from the application of antityphoid vaccination to man by Wright. In recent years, numerous serums and vaccines have been tested as prophylactic or curative agents, usually first in animals and later in man. Present knowledge of the somewhat complex subject of immunity, to which the antiserums and vaccines are related, makes it possible to state the outstanding facts in the form of general principles which may be taken as guides to the practical use in man of these agents for preventing or treating disease.

At the outset it should be understood that there is nothing occult or mysterious in the manufacture of serums and vaccines, and that any properly equipped and organized laboratory intent on doing so can turn out satisfactory products. Indeed, it is the very simplicity of the processes of manufacture which has led to wider commercial exploitation of these valuable agents than sound knowledge warrants.

When diphtheria antitoxin was found to have a high therapeutic value in the treatment of diphtheria, the hope was entertained that as the bacterial incitants or causes of the various infectious diseases came to be known, each in turn could be made to yield a corresponding antiserum, and thus a high degree of therapeutic control of these diseases would quickly be secured. As a matter of fact, this millenial hope has been realized in only a few instances, and expanding knowledge of the nature of the processes of infection, as well as the properties of the different bacterial agents causing disease, is gradually supplying the reasons for success, on the one hand, and of failure, on the other.

Diphtheria antitoxin is still the outstanding example of a therapeutically active serum, while tetanus antitoxin has a high protective but a lower therapeutic value. These two antitoxic serums—by which term is meant serums made from the poisons or toxins given off by the growing diphtheria or tetanus bacilli, for the poisons are the direct sources of the injury to the tissues and organs—act not directly on the infecting bacilli, but on their liberated toxins which they neutralize, after which the body readily rids itself of the bacilli themselves.

Most of the infectious diseases, however, are induced not by these soluble and readily released toxins, but by poisons or toxins held by or closely bound to the bacterial bodies themselves. The latter form of toxin is called endotoxin, to distinguish it from the other, and it so happens that not only is it given off with difficulty by the bacteria, but also that it is less well adapted for the immunization of animals, as for example the horse, which is the most suitable animal in which to produce the antiserums.

Indeed, the endotoxin as contained in different bacteria acts in a very capricious manner. Thus, in the form in which it exists in the typhoid bacillus, it does not lend itself well to the making of an antiserum; as it exists in the dysentery bacillus it lends itself somewhat better to this purpose; as it exists in the meningococcus it lends itself better still; while as it exists in the various cocci—pneumococcus, streptococcus and staphylococcus—it hardly lends itself at all.

The point of capriciousness is of great importance for practical medicine, and it can perhaps be illustrated best by considering the special instance of the pneumococcus. But first we must bear sharply in mind the property called specificity in respect to the bacteria and their antiserums. This specificity is a very delicately balanced condition and one that is made evident chiefly through the immunity reactions of organism (bacterium) and antibody (antiserum).

Thus we have learned that what we call pneumococci are not a single kind or species of bacteria, but that there are actually several kinds in the United States, at least three defined and many less well defined varieties, which formerly were all classed together. At present what we call Types I, II and III pneumococci are easily distinguished by immunity reactions, and all pneumococci not falling into these three types are classed together as Group IV. The last group differs from the other or type classes in not being a single kind, but a heterogeneous mixture of pneumococci.

The immense gain to therapeutics of this classification arises from the fact that a therapeutically active serum has been produced only from Type I pneumococcus. Hence any one who treats pneumonia rationally with antipneumococcic serum must confine his efforts to cases of Type I pneumococcus pneumonia,

proved such by laboratory tests; only these may be treated with Type I antipneumococcic serum. To go beyond this simple demonstrable fact and attempt to treat pneumococcus infection by use of a so-called "polyvalent" antipneumococcic serum is not only futile, but in the present state of knowledge, unscientific.

The outstanding need at present is to restrict the therapeutic employment of antiserums to what has been proved and is experimentally demonstrable, and not to resort to their empiric use on insufficient grounds of activity.

A similar mental attitude toward "vaccines" is to be desired. Exact agreement or parallelism does not exist between the immunizing power of certain vaccines and their capacity to yield effective therapeutic antiserums. Thus, it was stated above that the typhoid bacillus does not yield such a therapeutic serum, and yet typhoid vaccination is an effective bar against typhoid bacillus infection (typhoid fever); similarly, although an active antistaphylococcic serum has not been produced, still staphylococcus vaccine is therapeutically valuable in furunculosis, etc.

The antiserums are employed in two different ways, and in order to accomplish two quite dissimilar purposes: 1. As therapeutic or curative agents. To this use all the active antiserums are devoted. 2. As protection after exposure to certain diseases (diphtheria), or after injury (tetanus antitoxin). The second use is a subordinate one except in the case of tetanus antitoxin, regarding which it is the principal one. But the protection afforded by this so-called passive immunization is in all instances relatively brief and endures only for a few weeks.

The facts regarding the use of vaccines are the reverse. Their main field of usefulness is protective; and as they induce active immunity, their effect is enduring. The length to which this protective vaccination may be successfully and properly carried has not yet been determined. The outstanding success is typhoid-paratyphoid vaccination, but other successes relate to cholera and possibly to the type pneumonias.

The curative value of "vaccines," on the other hand, is a subject far less easily dealt with. The idea that vaccines can be used to combat generalized infections, because when injected under the skin they utilize the local tissues to elaborate healing immunity substances (antibodies), is a mere hypothesis that has never been verified. The lymphatic internal organs are the only ones known to be active in producing them, and hence the inoculation of killed cultures or "vaccines" in acute infections may merely amount to the adding, as it were, of fuel to the flames. And what in this respect is true of the bacterial bodies as a whole, as they exist in the vaccines, is true also of extracts or other preparations made from them.

SUMMARY

Up to the present, certain general principles of immunity have been discovered which may be taken as guides to the practical use in man of serums and vaccines.

The manufacture of serums and vaccines has come to be a relatively simple matter under conditions of proper laboratory equipment and personnel.

The great practical success achieved with diphtheria antitoxin and a few other antiserums, and with antityphoid vaccination, has led at times to wider exploitation of this class of therapeutic agents than sound knowledge warrants.

As far as possible, the use of the antiserums and vaccines in man should be based on trustworthy tests proving their value in experimental infections in animals. Because a therapeutically or prophylactically active serum or vaccine can be produced for one infectious micro-organism, it does not follow that a similarly active substance can be produced for another. In each instance, special studies of a precise character should be carried out in animals when possible, in order to determine whether or not a successful result has been achieved.

The high expectations entertained, after the great value of antidiphtheria serum had been demonstrated, that all the infectious diseases of which the inciting bacteria were known would come under a similar form of control, has not been realized.

And yet very substantial progress has been made. A part of this progress has been the recognition of the important part played by specificity in serum and vaccine therapeutics. A therapeutically effective antimeningococcic serum must contain the immunity substances or antibodies for the two main strains and the important subsidiary strains of the meningococcus, and a similarly effective antidysenteric serum must likewise contain the antibodies for the Shiga and Flexner types of dysenteric bacilli. Thus far, a therapeutically effective antiserum has been produced only for Type I pneumococcus, and it is without value in any other form of pneumococcus pneumonia than that due to Type I pneumococcus. No scientific basis exists, therefore, for the manufacture or the administration of a so-called "polyvalent" antipneumococcic serum.

Bacterial vaccines thus far have demonstrated their usefulness in the prevention of typhoid fever, and in a less degree of cholera and bacillary dysentery, and they may have an application to the prevention of the type pneumonias when these affections become, as they rarely do, epidemic. Bacterial vaccines also have a limited therapeutic application in certain types of local infection, as furunculosis. Their wider employment, or the employment of similar products, in the treatment of acute generalized infections is to be resorted to, if at all, with great caution and under the realization that a local elaboration of healing antibodies at the site of inoculation has not been conclusively demonstrated, and that the added bacterial material must reach the internal organs and thus the seats of disease.

I. ANTISTREPTOCOCCUS SERUM AND STREPTOCOCCUS VACCINES *

GEORGE H. WEAVER, M.D.
CHICAGO

Antistreptococcus serums have not proved of great value, and the routine treatment of all cases of streptococcus infection with serum is not desirable. In any case its use should always be preceded by a bacteriologic diagnosis. The serum appears to owe its activity largely to the specific opsonins which it contains. The opsonins are not present in high concentration, and consequently only large doses of serum can be expected to possess therapeutic activity. In addition to the opsonins, active leukocytes are essential in the process of destruction of the streptococci, and so it is very important that treatment be instituted early in the infection before the phagocytic properties of the leukocytes have been reduced by the disease. Polyvalent

* From the John McCormick Institute for Infectious Diseases.

antistreptococcus serums are prepared with the idea that they will be active in all sorts of streptococcus infections. It has been found in the case of antimeningococcus and antipneumococcus serum that, as polyvalence increases, the curative power over each individual strain is less. This probably also holds true in antistreptococcus serum. It might be desirable to have serums prepared from each type of streptococcus so that each case could receive the serum corresponding to the type of infecting organism.

Favorable conditions for the use of the serum exist in local infections in which the serum may be brought directly in contact with the bacteria, as in wounds, meningitis, pleuritis, etc. Wounds infected by streptococci may be freely bathed with the serum. In streptococcus meningitis the serum may be injected intraspinally in doses of from 20 to 30 c.c., and this may be combined with intravenous or intramuscular injections. Intrapleural injections of 30 to 50 c.c. may be given after aspiration. In general infections, intravenous or intramuscular injections may be used, the dose of serum in the former case being 20 to 50 c.c., in the latter, 50 to 100 c.c. The shock following very quickly on the injection of serum may itself be a danger. The usual serum reaction, developing its symptoms several days after the serum has been given, may add to the gravity of the patient's condition. The severe urticaria with intense itching, together with nausea and vomiting, which may be very persistent, interferes with the taking of food and rest, and helps to use up the patient's reserve. In all cases the harm from severe intoxication from large doses of foreign serum must be carefully balanced against the possible benefit secured. When this is done, very few patients with general streptococcus infection will receive the serum.

When it seems desirable to administer the serum, the patient's susceptibility to horse serum may be determined by the intradermal injection of a small amount of the serum. In the absence of local reaction, serum may be given without hesitation; but if a local reaction occurs, the patient should be desensitized by the administration of a very small primary dose, followed at intervals by gradually increasing quantities.

Streptococcus vaccines should always be autogenous. The importance of this is more apparent as the study of streptococci by more refined methods has shown that there are many strains of streptococci which differ among themselves in essential immunologic peculiarities. A vaccine prepared from one strain might be worthless against an infection by another one. There is nothing to say in favor of a polyvalent streptococcus vaccine, supposed to be active against all types of streptococci. In multiplying the strains, the quantity of each becomes so reduced that the essential one, if present, is in such small amount as to be without therapeutic effect.

Streptococcus vaccines are contraindicated in acute and general infections. In these circumstances the body is already exerting all its powers to produce antibodies to counteract the infection. The addition of still more bacterial toxin results only in harm. In streptococcus septicemias, vaccines are useless. In subacute and chronic local streptococcus infections, autogenous vaccines, given subcutaneously, sometimes act very favorably. This is especially true of infections of mucous surfaces unassociated with accumulations in poorly draining cavities. The initial quantity should be small, from 10 to 20 million, and in subsequent injections the amount should be gradually increased. Moderate local reaction is desirable, but general symptoms usually indicate that the dose given has been too large. The reaction from one injection should subside completely before another is given.

II. USE OF VACCINES AND SERUMS IN GONORRHEAL URETHRITIS AND ITS COMPLICATIONS

JOHN T. GERAGHTY, M.D.
BALTIMORE

Following the introduction by Wright of his views on vaccine therapy, this principle was applied extensively to the treatment of acute and chronic gonorrheal urethritis and its complications. For several years following the introduction of this form of therapy, the literature was filled with most conflicting statements regarding its value. Some observers were most enthusiastic, while others noted no benefit from its employment. It gradually became very evident in the minds of those best trained to judge that gonorrheal vaccines, as first suggested, were practically useless. Various modifications of gonorrheal vaccines were introduced by different workers to secure results, but all of these modifications, including polyvalent, autogenous and stock vaccines, have proved equally valueless. The question of dosage has also received considerable attention at the hands of many investigators, but no appreciable difference in results were obtained, whether the dosage was large or small.

While the results following the use of vaccines in the treatment of acute and chronic gonorrheal infections of the urethra have been unproductive of definite results, one sometimes sees in the acute complications, such as arthritis and epididymitis, most brilliant responses. It has been shown, however, very definitely that the response is in no way the result of a specific action of the vaccine, as identical results have been obtained by the employment of other vaccines and foreign proteins.

In most instances in which favorable results have been obtained in the gonorrheal complications, acute reactions have followed the use of the vaccine, such as temperature elevation and leukocytosis. These reactions are frequently quite alarming and are not entirely devoid of danger.

It can be stated definitely that gonorrheal vaccine or any of its modifications is utterly useless in the treatment of acute or chronic gonorrheal urethritis. The occasional symptomatic relief in epididymitis and arthritis is not the result of specific action, and the benefit derived is not proportional to the risk incurred.

In acute gonorrheal epididymitis, the intramuscular use of horse serum is followed in about 50 per cent. of the cases by a rapid subsidence of pain and tenderness. From 5 to 15 c.c. of serum is usually injected deep into the lumbar or gluteal muscles. In cases reacting favorably to this treatment there is marked symptomatic improvement in from three to five hours. It should be noted, however, that it exerts no influence whatsoever on the pathologic process in the epididymis, and resolution is not accelerated, nor does it alter the course of the urethral infection.

III. THE USE OF ANTIMENINGOCOCCUS SERUM IN THE TREATMENT OF EPIDEMIC MENINGITIS *

KENNETH D. BLACKFAN, M.D.
BALTIMORE

Epidemic meningitis, cerebrospinal fever or spotted fever has occurred in sporadic or epidemic form almost continuously since the pandemic of 1904.[1]

Before the world-wide epidemic there was no specific treatment for this disease. Jochmann, Kolle and Wassermann, and Flexner and Jobling first protected animals against the meningococcus and later prepared a therapeutic serum. The results with antimeningococcus serum when injected into the lumbar subarachnoid space of patients have been so satisfastory that it is almost universally employed. The treatment of meningococcus meningitis was revolutionized by the specific serum.

The mortality figures collected before serum treatment, compared with those following the use of the serum, leave no doubt as to the effectiveness of this form of therapy. During the preserum period the mortality recorded was about 80 per cent. in this country, 70 per cent. in England, 75 per cent. in France and 60 per cent. in Germany. Since the use of the specific serum, the gross mortality has been reduced to about 30.9 per cent.

The importance of early administration of the serum is well illustrated by statistics that have been collected by different observers, given in the accompanying table.

COMPARATIVE MORTALITY REPORTED BY VARIOUS OBSERVERS *

Treatment began	Flexner Per Cent.	Netter Per Cent.	Dopter Per Cent.	Christomanos Per Cent.	Levy Per Cent.	Flack Per Cent.
Before third day.....	18.1	7.1	8.2	13.0	13.2	9.09
From fourth to seventh day.	27.2	11.1	14.4	25.9	20.4	....
After seventh day.....	36.5	23.5	24.1	47.0	28.6	50

* Flexner, Simon: Mode of Infection, Means of Prevention and Specific Treatment of Epidemic Meningitis, J. A. M. A. **69**: 639 (Aug. 25), 721 (Sept. 1) 1917.

Unsatisfactory results from the use of antimeningococcus serum are due in a large part to the absence in the serum of antibodies for the infecting organism, to the serum's not being highly potent, and to lack of sufficiently intimate contact with the diseased process. During the late war an epidemic of meningitis in one of the belligerent forces was attended by so high a mortality in spite of administration of antimeningococcus serum that this treatment was virtually discontinued. On investigation, however, it was found that the potency of the antimeningococcus serum that had been used was almost nil. With a properly standardized serum the mortality was reduced immediately. Similar instances have been reported.

Antimeningococcus serum is prepared by immunizing horses with different strains of meningococci. The immunization is continued for a period of months or until a high degree of immunity has been reached. The horses are then bled, and the serum is preserved by the use of tricresol and kept sterile until used. A polyvalent serum standardized against all of the representative strains of meningococci should always be employed in the treatment of meningococcic infections. If the response of the patient to the antiserum is not satisfactory, then agglutinating tests should be made to determine whether the serum used contains agglutinins for the organism isolated from the patient. Monovalent serum should be used only after the type of meningococcus has been determined. Its superiority over the polyvalent serum made in this country has not been demonstrated.

In the intraspinal treatment of epidemic meningitis there are several fundamental principles to keep in mind in order to secure the best results with the specific serum:

1. A serum potent for the causative meningococcus should be employed.
2. The serum should be injected as early as possible in the course of the disease.
3. The serum should be injected into the spinal canal or into the ventricles or both so that it comes directly in contact with the meningococcus.
4. The chief action of the serum is to destroy the organism. For this reason it must be constantly present in as great a concentration as possible. Therefore it should be injected at frequent intervals and in as large amounts as are safe.
5. Serum should be discontinued only after the disappearance of the organisms and with improvement in the general condition of the patient.

The frequency with which antimeningococcus serum is used depends on the severity of the infection and the duration of the infection before treatment is instituted. In a suspected case of meningitis, lumbar puncture should be performed; and if a cloudy fluid is obtained, antimeningococcus serum should be administered without waiting for the bacteriologic report. Should the case eventually be shown not to be due to the meningococcus, no harm will have been done. In the cases of average severity when seen within the first two or three days after the onset, the injection should be repeated every twenty-four hours for three or four doses. In cases of greater severity the injection should be repeated every twelve hours for three or four doses, and thereafter every twenty-four hours. Even with improvement in the general condition of the patient and after the disappearance of visible organisms from the spinal fluid, it is advisable to give two or three successive doses to guard against a relapse. The persistence of the meningococci in the cerebrospinal fluid necessitates the continuance of daily injections of serum until the organisms have been destroyed. After serum treatment has been discontinued, lumbar puncture should be performed, after an interval of several days, and cultures and cytologic studies of the cerebrospinal fluid made.

The reappearance of the signs of meningitis is an indication to repeat lumbar puncture. The demonstration of organisms by culture or in stained smears requires the further administration of serum. After the institution of treatment, if the symptoms of meningitis persist or if the symptoms reappear, even with failure to demonstrate organisms, or if it becomes impossible to obtain cerebrospinal fluid by lumbar puncture, the possibility of a hydrocephalus should be considered. Failure to obtain cerebrospinal fluid may be due to an exudate so thick that it will not flow through the lumbar puncture needle. If one is confident that the spinal subarachnoid space has been entered, any one of the foregoing contingencies indicates the administration of

* From the Harriet Lane Home, Johns Hopkins Hospital, and the Department of Pediatrics, Johns Hopkins University.

1. The contributions of Dr. Simon Flexner have been used for reference in the preparation of this paper.

serum into the ventricle, through the open fontanel or a trephine opening. Then the serum should be introduced directly into the lateral ventricle at twenty-four hour intervals. When possible, the serum is injected intraspinally as well. Improvement frequently follows promptly the intraventricular injection of serum. Several patients whom I have treated recovered after four or five intraventricular injections of serum.

The amount of serum that is introduced into the spinal canal is determined by the amount of cerebrospinal fluid withdrawn by lumbar puncture. The amount of serum injected should never exceed the amount of cerebrospinal fluid withdrawn. The amount for adults is from 30 to 60 c.c. In infants and children the amount varies from 10 to 20 c.c., or from 5 to 10 c.c. less serum than the amount of cerebrospinal fluid withdrawn. When only small amounts of cerebrospinal fluid are obtained, not more than 5 c.c. in children or 10 c.c. in adults should be injected. Larger doses can be introduced into the ventricles than into the spinal subarachnoid space, but here also the amount injected should not exceed the amount of cerebrospinal fluid withdrawn.

The proper method of introducing serum into the lumbar subarachnoid space and into the ventricle is the gravity method. By this method the serum runs in slowly and at a regular rate, and the normal circulatory and respiratory variations of the cerebrospinal fluid in the subarachnoid space are not disturbed. The injection of serum with syringe is not recommended. Grave symptoms occasionally follow the introduction of serum into the spinal subarachnoid space. For this reason the lumbar puncture needle should be left in place for a few minutes after the serum has been given, so that the fluid may be removed quickly should they arise. The symptoms are due, as has been shown experimentally, either to increased cerebrospinal pressure or the too rapid introduction of serum. They are irregular and rapid pulse, cyanosis, rapid and feeble respirations, and cessation of respiration. If these occur, cerebrospinal fluid should be withdrawn, respirations maintained by artificial means, and respiratory stimulants given. Too rapid or too complete removal of the cerebrospinal fluid also may be followed by collapse.

Although the injection of antimeningococcus serum into the lumbar subarachnoid space has been attended by very considerable success, experience during the recent war has led a number of clinicians to revive a method advised several years ago, namely, the injection of serum into the blood as well as into the subarachnoid space. The intravenous administration is indicated theoretically by the occurrence of a primary blood infection before the onset of the meningeal infection. This has been established by blood cultures in a certain proportion of cases. As a rule, however, it occurs early and is a transitory invasion. The chief and dangerous mobilization of organisms is in the meninges. It cannot be denied that the intravenous injection of the serum is a logical procedure when the cases are recognized during the premeningitic stage of the disease. The diagnosis at this stage of the disease is difficult to make, and except in the midst of epidemics, the vast majority of the cases are not recognized before the development of the meningeal symptoms. After this time there is usually no bacteremia. A few observers contend that the course of the disease is shortened and the mortality is reduced by the combined intravenous and intraspinal method of treatment. Whether this is so only in cases of meningitis with an associated blood infection, or whether it applies as well to cases of meningitis without organisms in the blood, is not entirely proved by the available evidence. It would seem rational and advisable to give serum intravenously in all cases were it not for the fact that the intravenous injection of antimeningococcus serum is associated invariably with a severe systemic reaction. This reaction, in my experience, has been much more severe than the reaction attending the injection of serum into the subarachnoid space. Whether this is a true anaphylactic reaction or an endotoxic reaction is not clear. Almost all observers refer to the reaction that follows the intravenous injection of antiserum; there are but few records of its having been followed by serious consequences in adults. The reverse is true in children. I have seen two children whose death was apparently hastened by its use, and for that reason I am inclined to discourage intravenous administration of serum in children except in meningococcemia, alone, or in those cases of meningitis in which the organism persists or reappears in the blood. Extreme care should be exercised when the serum is administered intravenously either to children or adults. The procedure advised is as follows: The patient first should be desensitized by a subcutaneous injection of 1 c.c. of serum. One hour later, from 80 to 150 c.c. (the dose for children is modified accordingly) is injected into the vein. The first 15 c.c. is injected by syringe or gravity method at the rate of 1 c.c. per minute. After that the serum is injected more rapidly. The injection is repeated according to the severity of the symptoms every twelve to twenty-four hours until the process has subsided. If symptoms (cyanosis, rapid pulse and collapse) occur, the injection should be discontinued and the attempt repeated later. The alarming symptoms are combated by 1 c.c. of epinephrin chlorid, 1:1,000 solution, and $\frac{1}{100}$ grain of atropin by hypodermic injection. Treatment by the intraspinal method should be continued together with the intravenous method.

In the treatment of the complications of meningococcus infection, such as arthritis and pericarditis, the antimeningococcus serum should be brought into direct contact with the infecting organisms.

Serum disease occurs in from one third to one half of the patients treated with antimeningococcus serum The severe reactions following the intravenous or intraspinal injection of serum are treated in the manner mentioned above. Whenever antimeningococcus serum is given, measures to combat these conditions should be at hand. True anaphylaxis, if it develops, requires the desensitization of the patient to horse serum if further injections are indicated.

(Series to be continued next week)

Tuberculosis Death Rates in Various Occupations.—The *Lavoro* gives a long table showing the deaths in Italy from tuberculosis in proportion to the deaths from other causes in different professions and trades. The highest figure is "Students, 46.9 per cent." Printers come next, with 30.9 per cent.; barbers, 23.4; male nurses, 22.6; mechanics and electricians, 21.4; postal and telegraph employees, 20.7; tailors and railroad employees, about 19; coachmen, etc., 10.5, and servants, 9.6; teachers, 8.4; sailors, 7.9; clergy, 7.4; engineers and architects, 6.2; physicians and dentists, 5.9; lawyers, 5.4; capitalists, 4.8, and lowest of all, mendicants and *ricoverati*, 2.8 per cent.

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SATURDAY, JANUARY 1, 1921

ARMAND GAUTIER AND PTOMAINS

The death of Armand Gautier, ex-president of the Académie de médecine, and professor of chemistry of the Faculté de médécine de Paris, to which position he succeeded his teacher, Wurtz, serves to recall the part that he played in certain developments of medical interest. Gautier published several treatises on varied aspects of biochemistry and on the science of nutrition. At one time he was particularly interested in the apparently widespread distribution of arsenic in traces in living structures, and its possible rôle in biologic processes. His name, however, is probably best known to medical readers through its association with the word "ptomain." This term was first applied by the Italian toxicologist François Selmi of Bologna. In 1870, in the course of a medicolegal investigation, the latter isolated from organs of a person supposed to have been poisoned an alkaloid-like substance not identical with any of the comparable compounds known at that time. This experience was repeated in the following years, and presently Selmi came to the conclusion that during putrefaction in the cadaver there may be formed basic poisonous products analogous to the familiar alkaloids of plant origin.

Meanwhile, Gautier had discovered independently, in the course of investigations on the proteins which were demanding his attention, that albuminous materials and notably fibrin, left to putrefy, gave rise, in addition to numerous already known compounds, to small quantities of "alcaloïdes complexes, altérables, fixes ou volatils."[1] The basic properties of these newly discovered substances, their more or less pronounced toxicity and other physiologic effects were described by Selmi in 1878 in a monograph, "Sulle ptomaine od alcaloidi cadaverici," etc. But the further exploitation of the expressive word ptomain thus introduced into medical literature was largely the outcome of Gautier's early studies. In contrast with the bacterially produced ptomains, Gautier pointed out the existence of "physiologic alkaloids" which he accordingly designated as leukomains. For years, medical students were trained to juggle with these words, the one representing products of cellular activity during life, the other the results of the putrefaction of dead protein.

A recent writer,[2] reminding us how it was thought at one time that disease is caused by bacteria through the production of these ptomains, has remarked that these special compounds are not always toxic and therefore cannot be held responsible in every case for the untoward effects of bacterial cultures. In other words, ptomains, in Gautier's sense, and bacterial poisons are not synonymous terms. The enthusiasm displayed a generation ago for the study of ptomains has given way to other investigations of the harmful effects of microorganisms. The leukomains of Gautier are now recognized as products of normal or pathologic metabolism arising independently of bacteria. The indefinite "ptomain poisoning" of a decade or two ago no longer serves so commonly as a cloak for our ignorance. Nevertheless, this must not allow us to forget the deserts of the French chemist who called attention to a new and interesting phase of bacterial chemistry.

1. The first mention of this is made by Gautier in his Traité de chimie appliquée à la physiologie **1**: 253, written in 1872 and published in 1874.

LIMING A NATION

In a recent issue,[3] the calcium requirement of man formed the subject for editorial discussion. The topic appeared timely in view of the period of food retrenchment which many peoples are now living through and the possibility that the concentration of attention on the greater needs of nutrition may result in overlooking equally essential but less prominent components of human diet. It is interesting to learn, therefore, that the ministry for public welfare in Berlin is being confronted with the necessity of considering, from a national standpoint, some of the problems related to calcium. Indeed, it appears that the public has taken cognizance of the situation to the extent of organizing propaganda in various forms, one of which is the "Union of Friends of Calcium" (Bund der Kalkfreunde), clamoring for the more liberal use of lime in the German dietary. It is almost unnecessary to add that the commercial interests have not been behindhand in appreciating the situation to the extent of "aiding and abetting" the movement by clever advertising of mineral waters, proprietary salt mixtures, etc., as specially desirable sources of the heralded element which every chalk cliff contains in such abundance.

In a report to the ministry on the situation thus created, the Berlin physiologist Rubner[4] has properly called attention to the scanty evidence on which this program of "liming" the people of the "Central Empires" is based. Among the dangers attributed by

2. Underhill, F. P.: Reference Handbook of the Medical Sciences, New York, William Wood & Co. **7**: 381.

3. The Calcium Requirement of Man, editorial, J. A. M. A. **75**: 1649 (Dec. 11) 1920.

4. Rubner: Ueber die Frage des Kalkmangels in der Kost, Gutachten der wissenschaftlichen Deputation für das Medizinalwesen in Berlin, Erstattet am 10 März, 1920, Vrtljschr. f. gerichtl. Med. **60**: 1 (July) 1920.

the popular preachments to a lack of mineral salts is that of inadequate digestibility of the rest of the ration. This probably dates from an older idea of Liebig found in the statement that the nutrients are digestible only when they contain all of the inorganic components that are naturally associated with them. The untenability of such an assertion has long since been demonstrated by actual experiment. The ingredients of patent flour, for example, do not experience a poorer utilization because the mineral matter present in the bran has been discarded.

Another untenable assertion that has crept into the semipopular clamor for the "neglected mineral salts" assumes that in some way they are conveyers of energy. Just what subtle processes are supposed to be executed by them is not clear. Energy transformation, osmotic changes, ionic dissociation are terms that impress the untutored, who often forget that the law of the conservation of energy applies to the living body as well as to the world about us. Ex nihilo nihil fit. Equally fallacious is the doctrine that an adequate supply of inorganic elements enables the body to conserve protein.

Rubner has come to the conclusion that a lack of calcium is likely to arise only when there is a deficit of food in general. Presenting the matter somewhat differently, he believes that additional supplies of calcium will be of little avail to an underfed populace unless the total food allowance can be increased; for calcium cannot promote growth, to quote his illustration, in the absence of organic nutrients. The observations of Sherman [5] tend to indicate that more diets may be deficient in calcium than in protein. Both investigators agree, however, that in general it is a wiser policy to attempt to secure additions of natural foods to the diet of man than to attempt to supply specific salts in isolated form. The question has even been raised whether the enthusiasm for an increment in the lime intake, such as is proposed in the more or less indiscriminate inclusion of its salts to bread and other foods, may not even become detrimental. The alleged dangers of drinking hard water, with the possibility of resulting calcium concretions, are brought to mind. At present such fears seem entirely unfounded, in view of the remarkable regulatory powers of the organism.

Aside from its possible commercial perversions, there is another aspect of this popular propaganda for lime that merits serious consideration in a nation threatened with food shortage. The transfer of problems of the public health out of the hands of experts into those of the layman is frequently liable to unfortunate consequences. Failure to accomplish the desired end sometimes follows misguided projects resting on false or unproved assumptions. The error lies with the protagonists, but it is usually attributed by the public to science itself. Thus, scientific endeavor is thwarted or suffers in reputation because it has been misrepresented by either the professional quack or the misguided, though well meaning, pseudoscientist. This has happened in medicine. The profession must guard against its recurrence by vigorous critique and a fearless stand wherever the truth has become distorted.

5. Sherman, H. C.: Calcium Requirement of Maintenance in Man, J. Biol. Chem. **44**: 21 (Oct.) 1920.

ECHINACEA

Intelligent members of the medical profession must be well aware that both the Pharmacopeia of the United States and the National Formulary, now recognized by federal and state laws as standards for drugs and their preparations, include many products that can scarcely be justified as medicinal on the basis of scientific considerations. When once a preparation has found its way into these "official" lists, it thereby gains the presumption of some therapeutic virtue. All too frequently, what it lacks in this respect is replaced by the potent promises of specious advertising; and when the admitted product thus becomes recognized, its place often is long assured by some indefinable force of tradition and reverence for supposed pharmacopeial wisdom.

Among the products included in the National Formulary is the fluidextract of echinacea. The claims for this drug as an "alterative" and antisyphilitic are denoted by one of the publications of the American Medical Association as "extravagant and unwarranted," with the added statement that there are no established indications for its use.[1] In 1909 a report of the Council on Pharmacy and Chemistry of the American Medical Association denied echinacea a place in New and Nonofficial Remedies with the statement that, in view of the lack of any scientific scrutiny of the claims made for it, echinacea is deemed unworthy of further consideration until more reliable evidence is presented in its favor.[2] Despite this, it is stated by experts of the U. S. Department of Agriculture that the use of echinacea has become extensive. The fluidextract and the tincture are made in enormous quantities, and the root enters into the composition of a large number of patent, proprietary and nonsecret mixtures. Couch and Giltner [3] of the Bureau of Animal Industry, who are responsible for this information, have collected details of the claims variously made for the drug. Echinacea is stated to be a corrective of "depravation" of body fluids, and of septic, fermentative or zymotic conditions. It is said to antagonize infectious processes and "blood poison," and to be useful in puerperal sepsis, uremia, pernicious malarial or septic fevers, typhoid fever, and all fevers caused by absorption of septic material. It has been advertised as a specific against the venoms of rattlesnakes,

1. Epitome of the Pharmacopeia of the United States and the National Formulary, with Comments, Chicago, American Medical Association, 1916, p. 80.
2. Echinacea Considered Valueless, J. A. M. A. **53**: 1836 (Nov. 27) 1909.
3. Couch, J. F., and Giltner, L. T.: An Experimental Study of Echinacea Therapy, J. Agric. Res. **20**: 63 (Oct. 1) 1920.

other serpents, and insects. "Pyemia," "goiter," "smallpox," "anthrax" and "hydrophobia" are reported to have been cured by echinacea. It is alleged to be an antidote for tetanus. It has been used locally in erysipelas, bedsores, fever sores, chronic ulcers, glandular indurations, syphilitic nodules, burns and gangrene, and is said to be an active sialogogue, diuretic and diaphoretic.

This is a rather formidable aggregation of potencies for even the most respectable of drugs. The government pathologists [2] have accordingly undertaken to determine the possible usefulness of echinacea as a remedy in several pathologic conditions induced by bacteria, their products, or allied toxins. The results of the experimental investigations on guinea-pigs are devoid of evidence of functional effects, as were the earlier studies of competent workers. In both tetanus and botulism produced by the administration of bacterial toxin, the course of the disease was not modified by the echinacea. In septicemia produced by injection of a culture of *Bacillus bovisepticus,* and in anthrax produced by infection with *B. anthracis,* the result indicated that echinacea had no influence. In rattlesnake poisoning produced by injection of a solution of the dry venom, the echinacea preparations were without curative effect. In the chronic diseases, tuberculosis produced by injection of a human strain of the bacillus, and trypanosomiasis produced by injection of *Trypanosoma equiperdum,* the remedy was administered over an extended period of time without apparently influencing the course of these diseases. Of course, it will be retorted that the negative results on laboratory animals need not necessarily apply to sick human beings, and that subtle potent effects are not always discovered by research workers. An appeal may be made to the "generations" of patients, particularly American Indians, who have experienced the beneficent influences of echinacea. Scientific medicine of today, however, asks for evidence that can be demonstrated by the pharmacologist, or can be appreciated and accepted by the critical clinician as well as the quack. Echinacea has not yet established its claims for such recognition, although it may remain a name to conjure with.

VITAMIN, APPETITE AND DIGESTION

Although the physiologic importance of the food factors popularly designated as vitamins has come to be widely recognized, the mode in which the latter affect the well-being of the individual remains to be elucidated. Experiments involving the significance of one of the vitamins in nutrition has just been reported by Karr [1] from Mendel's laboratory at Yale University. They show in a striking manner that the food intake, so far as it relates to appetite, may be decidedly modified by the presence or absence, respectively, of sources of water-soluble vitamin—vitamin B—in the diet. Dogs were placed on a liberal ration of isolated protein, fat and sugar, together with a commonly used mixture of those inorganic salts supposed to suffice for the body's needs. Such a mixture would have been expected only a few years ago to embody an adequate ration, since it contained representatives of all the customary nutrients—the proteins, fats, carbohydrates and inorganic salts—and was rich in energy as expressed in its calory value. The animals took the diet for a few days, but sooner or later refused to eat. As soon as a source of the water-soluble vitamin was administered, however, the food previously refused was again freely consumed. The vitamin preparations, including tomatoes, milk, yeasts and products from these, were administered like a drug apart from the food after the meal had been offered; hence they could not have directly affected the palatability of the ration. So long as the therapeutic dose of vitamin continued to be supplied in addition to the vitamin-free ration, the latter was readily eaten.

From the results recorded it is evident that in the dog—and doubtless this applies to other species—some relation exists between the desire to partake of food and the amount of the so-called water-soluble B vitamin ingested. A rather definite minimum amount of this food factor seems to be necessary to sustain the desire to partake of food that is otherwise adequate for the nutrition of the animal. The quantity varies with the animal. When dogs chance to continue to eat the described vitamin-free rations for a longer time without the addition of any accessory substance, as occasionally happens, characteristic symptoms, polyneuritic in character, may develop.[2] Karr found that these could be alleviated in a surprising manner within a few hours by the ingestion of brewery yeast or tomatoes, substances rich in water-soluble vitamin. The results recall the classic experiments on the production and relief of beriberi.

It has been assumed by several writers that the water-soluble vitamin promotes the secretory activities of the alimentary apparatus. If this is true, one might expect the lack of the food factor to give rise sooner or later to digestive disturbances, owing to the lack of adequate alimentary secretions. Karr's [3] observations on dogs kept on diets deficient in water-soluble (B) vitamin failed to show any impairment in the digestibility and utilization of protein in the gastro-intestinal tract. He asserts the probability, furthermore, that the lack of the vitamin does not primarily affect the intermediary metabolism of the protein nitrogen. The unique influence of the vitamin factors thus remains among the secrets which the physiology of nutrition has still to reveal.

1. Karr, W. G.: Some Effects of Water-Soluble Vitamin upon Nutrition, J. Biol. Chem. **44**: 255 (Nov.) 1920.

2. Voegtlin, Carl, and Lake, G. C.: Am. J. Physiol. **47**: 558 (Jan.) 1919.

3. Karr, W. G.: Metabolism Studies with Diets Deficient in Water-Soluble (B) Vitamine, J. Biol. Chem. **44**: 277 (Nov.) 1920.

DEATHS OF PHYSICIANS IN 1920

During 1920, the deaths of 2,321 physicians in the United States and Canada were recorded in THE JOURNAL. Adding 2.5 per cent. to this number on account of delayed reports and possible omissions, we may estimate the total number of deaths as 2,379. On an estimate of 160,000 physicians, in the United States and Canada, this is equivalent to an annual death rate of 14.81 per thousand. For the eighteen previous years the mortality rates were: 1919, 13.55; 1918, 16.88; 1917, 14.37; 1916, 14.08; 1915, 15.71; 1914, 14.41; 1913, 14.64; 1912, 14.13; 1911, 15.32; 1910, 16.96; 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.20; 1905, 16.36; 1904, 17.14; 1903, 13.73, and 1902, 14.74. The average annual mortality rate for the period from 1902 to 1920, inclusive, was, therefore, 15.46 per thousand.

Ages.—Of the 2,272 decedents whose age was stated, 37 were under 30; 174 between 31 and 40; 351 between 41 and 50; 463 between 51 and 60; 541 between 61 and 70; 436 between 71 and 80; 208 between 81 and 90, and 19 between 91 and 100. The greatest number of deaths for a given age occurred at 63 and 64 years, at each of which ages sixty-five deaths were noted.

Causes of Death.—General diseases accounted for 257 deaths; diseases of the nervous system, 271; diseases of the circulatory system, 404; diseases of the respiratory system, 266; diseases of the digestive system, 70; diseases of the genito-urinary system, 154; senility, 77; suicide, 32; accidents, 102; homicide, 14, and sequels of surgical operations, 74. The principal assigned causes of death from disease and their frequency were: organic heart disease, 236; cerebral hemorrhage, 211; pneumonia, 186; nephritis and uremia, 142; malignant tumors, 91; tuberculosis, 59; angina pectoris, 50; pneumonia-influenza, 37; arteriosclerosis, 33; myocarditis, 34; septicemia, 31; influenza, 29; diabetes, 28; meningitis, 17; cirrhosis of the liver and acute dilatation of the heart, each 16; endocarditis and anemia, each 15; peritonitis, 12, and appendicitis and gastritis, each 11.

Accident.—The causes and distribution of the 102 deaths from accident were: automobile, 27; automobile-railway (grade crossing), 22; poisons, 9; falls, 8; firearms, 7; drowning, 6; railway and street car, each, 5; asphyxia, 3; exposure and burns, each, 2; crushing, 1, and other accidents, 5. The thirty-two physicians who ended their lives by suicide selected these methods: firearms, 18; poisons, 7; cutting instruments, 3; strangulation, 2; jumping from high places and drowning, each 1. Of the fourteen homicides, nine were due to firearms.

Civil Positions.—Of those who died, 1 had been a member of Congress; 1, consul; 1, a state governor; 13, members of state senates; 19, members of the lower houses of legislatures, and 25 had been mayors; 17, members of state boards of health; 24, members of state boards of medical examiners; 4, members of other state boards, and 1, a member of the National Board of Medical Examiners.

Association Fellowship.—Of the 520 Fellows of the American Medical Association who died during 1920, one had been President; four, Vice President; seven, members of the House of Delegates; one, a member of the Council on Medical Education, and four, section officers.

Current Comment

DIPHTHERIA ANTITOXIN AND DIPHTHERIA BACILLI

The well established curative properties of diphtheria antitoxin must not be confused with its possible value as a prophylactic against the disease. Antitoxin is commonly employed by injection to detoxicate or "neutralize" the circulating toxin elaborated by the infective bacillus. Attempts have been made to apply the same remedial agent locally in the pharynx and nares with the hope of eradicating the objectionable micro-organisms that may have found lodgment there. A recent writer admits that negative cultures may sometimes be obtained after such local treatment with antitoxin, but he adds that this does not constitute conclusive proof of a bactericidal potency. The disappearance of Klebs-Loeffler bacilli from a membrane bathed with antitoxin may be due to mechanical effects that might equally well be brought about by cleansing with suitable saline solutions. The fact that diphtheria organisms grow luxuriantly in antitoxin speaks against any direct germicidal virtue. Investigators[1] at the Johns Hopkins Hospital have attempted to determine more adequately whether subcutaneous administration of diphtheria antitoxin exerts any influence more indirectly in preventing lodgment and growth of diphtheria bacilli in the nasopharynx of individuals thus treated. The results were entirely negative.

GYNECOMASTIA

Like various other conspicuous external anomalies of the human body, the occurrence in the male of a mammary development resembling that of the female in its anatomic appearances and milk-secreting function has often aroused interest, if not amazement. Instances of such gynecomastia, as the unique condition has been termed, abound in medical literature from olden times to the present. In addition to the conspicuous feminine-like hypertrophy of the male breast, an actual occurrence of lactation has been described in a few cases, the analogy going to the extent of reported chemical analysis of the "buck milk." There has unquestionably been much exaggeration and misinformation, as might be expected, concerning circumstances that often depend on mouth-to-mouth methods of repetition and publication. The occurrence of the essential phenom-

1. Gelien, J.; Moss, W. L., and Guthrie, C. G.: The Effect of Diphtheria Antitoxin in Preventing Lodgment and Growth of the Diphtheria Bacillus in the Nasal Passages of Animals, Bull. Johns Hopkins Hosp. **31**: 381 (Nov.) 1920.

enon, however, remains undisputed. According to a recent critical study by Hammett,[1] the endocrine origin of gynecomastia is now reasonably well established. Animal experimentation in which the extirpation and transplantation of the sex organs—the gonads—have played the decisive part has demonstrated conclusively that it is possible to produce in males an enlargement at puberty resembling that taking place in the female and that, furthermore, this development may continue to the point of milk production. Precisely what the stimulus is in the case of the gynecomasts is not yet so clear. It seems as if testicular and ovarian hormones, respectively, determine the development of characteristic masculine and feminine functional changes. It has been alleged that the tendency toward feminine development is a universal endowment of both sexes. In the male the exhibition of the female type is inhibited, on this hypothesis, by the presence of the testicular hormone; and when this is lacking, the deprived male tends to develop the inherent feminine features. For the moment, however, this theory of inhibition has been abandoned in favor of a more positive stimulus for development of the secondary sexual characters. According to Hammett, the phenomenon of gynecomastia is not attributable merely to a diminution of testicular function, as Novak[2] has believed, but further to the coincident existence of some potent hormone-producing tissue resembling in its effect that of the female ovary and giving rise to the mammary enlargement characteristic of the sex. Whether the male gonadal tissues have in some way become perverted in function in these cases, or whether some special ovarian-like tissue sometimes develops in the male body, remains for the present merely an interesting speculation.

PHARMACEUTICAL BARNUMS

Does the public love to be humbugged? We doubt it. That we, whether sage or fool, *are* humbugged is undeniable. We are humbugged just to the extent that we are ignorant. There lies one of the most powerful factors operating to the advantage of the "patent medicine" maker and the quack. The layman's ignorance of the possibilities and limitations of drugs is wide and deep. Hence the ease with which he is fooled on this subject. A seeming frankness in advertising being the order of the day, the nostrum maker makes a pretense of telling what is in his stuff without disclosing any facts that will tend to lift the veil of mystery and thus destroy his greatest asset. So the exploiter of nostrums to the medical profession, realizing that at least a pretense must be made of giving the composition of medicaments offered to the physician, declares that his clay poultice has for its base "anhydrous and levigated argillaceous mineral." This sounds much more imposing than dry and finely powdered clay, and satisfies by its very sonorousness. Now comes a product exploited chiefly to members of the dental profession but also, it seems, to physicians. Tablets, "activated tablets," if you please! They are "an anodyne, analgesic febrifuge sedative, exorcising [*sic!*] antineuralgic and antirheumatic action." And their composition? Simply "an activated, balanced combination of the mono-acetyl-derivative of para-amidophenetol together with a feebly basic substance in the alkaloidal state from the Thea-Sinensis." As clear as the Missouri River! Some day some dentist or physician is going to investigate and find that this awe-inspiring, polysyllabic example of exuberant verbosity means nothing more mysterious than our old friends acetphenetidin (phenacetin) and caffein. In the meantime, the exploiters may smile softly and murmur: "Barnum was right!"

THE DAILY BATH

Among the New Year resolutions which might commend themselves to some of our careless citizenry would be the high and noble resolve to indulge in more frequent ablutions. The *Domestic Engineering* magazine feels the need of urging seriously and repeatedly this highly moral resolution; in fact, for more than two months it has been carrying on a "take a bath every day" campaign. The health officials of our states and large cities have been circularized and show a remarkable unanimity of opinion as to the advisability of this procedure. We say "remarkable" since there are few health questions on which some authority may not disagree with the majority. But where is the man so bold as to stand forth and say that soap and water are not essential? *Domestic Engineering* is not campaigning for any other kind of a bath than the cleansing bath. It rides no hobbies for cold or hot baths, for oil or mud baths, for light or electric baths but merely plain baths—dirt removing, germ removing baths—not Saturday night but every night baths. It is of course unnecessary to tell the scientific reader that *Domestic Engineering* is an elite and elegant name for "plumbing." Well—we wish it success in this campaign. Prospects begin to look bright for a clean year in 1921. As the shoemaker says: "There's nothing like leather."

METHYL ALCOHOL VERSUS "WOOD" ALCOHOL

The untoward consequences to human life which have followed the intake of fluids containing methyl alcohol in the last few years, and particularly since the prohibition laws went into effect, ought to leave an indelible impression of the danger of methyl alcohol to man. The more remote effects of this substance, notably the peculiar danger of ensuing blindness which differentiates methyl alcohol from the closely related ethyl alcohol or grain spirits, represent a subtle menace which is rarely suspected until the damage produced is beyond repair. The relative toxicity of the two alcohols is not adequately expressed by their immediate or acute effects; they differ in their behavior in metabolism, in the comparative readiness with which they can be disposed of in the organism, as well as in the permanent damages which they may initiate when the dosage is adequate. The comparison is not favorable to methyl alcohol. Nevertheless, in the repeated attempts made to

1. Hammett, F. S.: Gynecomastia, Endocrinology **4**: 205 (April-June) 1920.

2. Novak, J.: Zur Kenntniss der Gynäkomastie und zur innersekretorischen Theorie der Brustdrüse, Zentralbl. f. Gynäk. **43**: 253, 1919.

justify the introduction of methyl alcohol for the less readily obtainable and now specifically prohibited ethyl alcohol, the dangers of the substitution are sometimes minimized by those to whom the change represents a trade advantage. It is claimed, for example, that the unfortunate properties of "wood alcohol" are attributable to "impurities" of some kind or another, and that pure or refined methyl alcohol is devoid of the larger dangers. In view of this insidious propaganda it is important to note the latest evidence which Sollmann[1] of Western Reserve University has contributed. He substantiates the contention that both purified methyl alcohol and "wood" alcohol are markedly more toxic than ethyl alcohol. In bringing out the deleterious effects of chronic alcoholism, Sollmann's new experiments on growing animals emphasize the greater dangers of methyl than of ethyl alcohol; but above all they demonstrate that the alleged "impurities" of ordinary wood alcohol play only a minor part in chronic intoxication. The methyl alcohol, which is the essential ingredient, is likewise the dominant toxic agent. Those who attempt surreptitiously or otherwise to foist the highly dangerous methylated spirits in any guise or under any pretext on the public can no longer hide behind the shield of the asserted "purity" of the alcohol used. We should warn the public to beware of the dangers of methyl alcohol, whether it is labeled pure or impure —or perchance whether or not it is labeled at all.

THE BILE AND THE BEHAVIOR OF FATS IN THE ALIMENTARY TRACT

In recent years, physiologists have modified in several respects their conception of the rôle of the bile in the alimentary processes. Antiseptic properties are no longer attributed to this secretion of the liver, nor is it believed to be endowed with any pronounced digestive activities. Nevertheless, there are experimentally founded indications that, in the test tube at least, the bile may facilitate the digestion of fats by the pancreatic and intestinal secretions. Thus, it is said that if bile is present in the mixtures, the power of the pancreatic juice to digest fats is increased several fold.[2] Opportunities for testing the possible interrelations of the two secretions in the human subject are not frequently obtained, though they are by no means unknown. Diseases, as well as the anomalies of nature, sometimes devise an unintentional experiment for the ready clinical investigator. This has happened in a recently reported case of congenital atresia of the bile ducts observed by Hutchison and Fleming.[3] A similar case was observed not long ago by Holmes.[4] No bile entered the intestine, but the pancreas was found to be normal and its duct patent. A study of the feces in comparison with the food intake showed, as may be anticipated, that the absorption of fat was greatly decreased or minimal in contrast with what happens in the normal child under the same conditions of diet. Yet, despite this defective absorption, the digestion of the fat to the extent of a lipolytic production of fatty acids was only slightly inhibited, even in the complete absence of bile. This finding emphasizes anew, on the basis of data secured from human beings, that the presence of bile is not essential to alimentary lipolysis, despite the dominant rôle of this secretion in facilitating the subsequent absorption of the products of the digestion of fats.

1. Sollmann, Torald: Studies of Chronic Alcohol Intoxication on Albino Rats, II, Alcohols (Ethyl, Methyl and "Wood") and Acetone, J. Pharmacol. & Exper. Therap. **16**: 291 (Nov.) 1920.

2. Rachford: Jour. Physiol. **12**: 72, 1891; **25**: 165, 1899. Martin and Williams: Proc. Roy. Soc. **48**: 160. Tschermak: Centralbl. f. Physiol. **16**: 329, 1902. Bruno: Arch. d. sc. biol. **7**, 1899. Von Fürth and Schütz: Beitr. z. chem. Physiol. u. Path. **9**: 28. 1907 (earlier literature cited). Hewlett: Effect of Bile on Ester Splitting Action of Pancreatic Juice, Bull. Johns Hopkins Hosp. **16**: 166, 1906.

3. Hutchison, H. S., and Fleming, G. B.: The Digestion and Absorption of Fats in a Case of Congenital Atresia of the Bile Duct, Glasgow M. J. **94**: 65 (Aug.) 1920.

4. Holmes, J. B.: Congenital Obliteration of the Bile Ducts, Am. J. Dis. Child. **11**: 405 (June) 1916.

Association News

THE BOSTON SESSION

Additional Hotel Headquarters

In addition to the hotel headquarters for the annual session of the American Medical Association to be held in Boston, June 6-10, 1921, reported by the Local Committee on Arrangements and published in THE JOURNAL, Dec. 18, 1920, p. 1722, still other headquarters have been assigned. The following are the designated hotel headquarters:

Sections	Headquarters
Practice of Medicine	Hotel Somerset
Surgery, General and Abdominal	Hotel Lenox
Obstetrics, Gynecology and Abdominal Surgery	Hotel Touraine
Ophthalmology	Hotel Vendome
Laryngology, Otology and Rhinology	Hotel Brunswick
Diseases of Children	Parker House
Pharmacology and Therapeutics	Copley Square Hotel
Pathology and Physiology	Hotel Bellevue
Stomatology	Parker House
Nervous and Mental Diseases	Young's Hotel
Dermatology and Syphilology	Copley Square Hotel
Preventive Medicine and Public Health	Hotel Bellevue
Urology	Hotel Westminister
Orthopedic Surgery	Adams House
Gastro-Enterology and Proctology	Hotel Essex

The Committee on Hotels, of which Dr. John T. Bottomley is chairman and Dr. Stephen Rushmore is secretary, requests that those who desire to secure hotel reservations shall write to the committee. The section in which the applicant is especially interested, the number in the party and when it is planned to arrive in Boston should be stated. Address communications to one of the officers at the Boston Medical Library, 8 The Fenway.

MIDWINTER CONFERENCE

The regular midwinter conference of the American Medical Association will be held at the Congress Hotel, Chicago, Monday, Tuesday, Wednesday and Thursday, March 7-10, 1921. The annual Congress on Medical Education and Licensure will occupy the first three days. A joint program on medical education will be presented by the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges and the Federation of State Examining Boards. The fifteen committees on graduate training in specialties will present reports on suggestive courses of instruction. The clinical subjects of the medical course will be discussed by several committees. Other papers will discuss problems of interest to state licensing boards. On Thursday, March 10, the Council on Health and Public Instruction will hold a conference with representatives of the state medical associations, state departments of health, voluntary public health associations and others interested in the social problems of the medical profession, public health and the organization of the profession and public for constructive public health work. Detailed programs will appear later

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Typhoid Fever Epidemic.—In an outbreak of typhoid fever at Cass, a town near Ozark, thirty cases were reported up to December 11.

Physicians' Homes Destroyed.—The home of Dr. F. E. Harrison, Fordyce, was practically destroyed by fire, December 11.——Fire recently destroyed the home of Dr. Hubert Shull, Texarkana, with all its contents.

County Society Elections.—At a meeting of the Lawrence County Medical Society the officers for the ensuing year were elected as follows: president, Dr. Joel C. Land; vice president, Dr. John C. Hughes, and secretary-treasurer, Dr. Horace R. McCarroll, all of Walnut Ridge.——The new officers of the Pulaski County Medical Society, elected at the regular meeting, December 14, are as follows: president, Dr. Robert Caldwell; vice president, Dr. John B. Dooley; secretary, Dr. Darmon A. Rhinehart, and treasurer, Dr. William R. Bathurst, all of Little Rock.

CALIFORNIA

New Tuberculosis Sanatorium Opened.—The Olive View Sanatorium for Tuberculosis, four miles north of San Fernando, is open for the reception of patients. The sanatorium is operated as a ward of the Los Angeles County Hospital and has accommodations for 100 patients. Dr. Audley O. Sanders is superintendent.

Society **Semicentennial.**—Los Angeles County Medical Association will celebrate its fiftieth anniversary, January 31, by a reception and banquet to Drs. Walter Lindley, Joseph Kurtz and J. P. Widney, three of the original founders. The arrangement committee consists of Drs. Harlan Shoemaker, Stanley Black and George Piness.

Chiropractors Convicted.—It is reported that several chiropractors have recently been convicted of illegal practice, as follows: Robert Birch, Los Angeles, pleaded guilty, Nov. 17, 1920, and was fined $100; H. A. Brown, Richmond, was found guilty and fined $100; Ben Bolt, Los Angeles, was found guilty and fined $300. (On refusal to pay the fine he was committed to jail.)

Illegal Practitioners Prosecuted.—The California Board of Medical Examiners reports the following prosecutions of illegal practitioners: "Dr." Henry Ching, Chinese herbalist, Los Angeles, was convicted in the federal court and sentenced to five years in the penitentiary; he disappeared and his bail of $10,000 was declared forfeited. S. Gordon Henderson, Los Angeles, pleaded guilty, November 26, to a charge of violating the medical practice act and was sentenced to pay a fine of $100 or serve sixty days in the county jail. Two Chinese herbalists pleaded guilty to a charge violating the medical practice act and were sentenced to ninety days in the county jail; the sentences were suspended for two years. B. C. Eilers, a chiropractor, was arrested in San Bernardino for violating the medical practice act. Under the name of B. C. Eilersficken he formerly conducted a school of chiropractic in San Diego.

CONNECTICUT

Pediatrics Professor.—Dr. Edwards A. Park, associate professor of pediatrics in Johns Hopkins University, has been appointed professor of pediatrics in Yale Medical School. It is planned to place the department on a full time basis.

Medical Fraternity Chapter.—The twenty-sixth chapter of the Alpha Omega Alpha society has been established at Yale Medical School, with Drs. Milton C. Winternitz, Joseph M. Flint, Harry B. Ferris, Arthus H. Morse and Samuel C. Harvey among the chapter members.

DISTRICT OF COLUMBIA

Society Meeting.—At the October meeting of the section on ophthalmology and otolaryngology of the Medical Society of the District of Columbia, Dr. Luther C. Peter, Philadelphia, read an address on "The Value of Perimetric Studies in the Diagnosis of Accessory Sinus Disease."

New Buildings for Army School.—Bids for the erection of the new Army Medical School buildings on the Walter Reed General Hospital grounds will be opened, January 15, by officers of the construction division in the Quartermaster's Department. The new buildings will cost about $1,000,000.

FLORIDA

Public Health Service Hospital.—The United States Public Health Hospital at Lake City was formally opened for the reception of patients, December 6. Surgeon Almon P. Goff is medical officer in charge.

Hookworm Clinic.—A free clinic for the cure of hookworm disease will be opened in the McCaskill Building, Milton, according to an announcement of the State Department of Health, following an extended tour of the state by Dr. Fletcher L. Tatom.

ILLINOIS

Provisions for Mental Defectives.—The city of Elgin is making provision for a special class for feebleminded children in one of the public schools and another class for backward children is under consideration.——Dr. Milton Jacobs, medical director of Rest Haven Sanatorium, Elgin, is conducting mental hygiene clinics in conjunction with the Elgin Free Dispensary.

Chicago

Luncheon to Dr. Flexner.—Dr. Simon Flexner, retiring president of the American Association for the Advancement of Science, was tendered a luncheon at the University Club, December 28, by about forty physicians of Chicago.

Special Bequests by Dr. N. S. Davis.—In the will of Dr. N. S. Davis are the following bequests for Chicago medical organizations: To the Society of Medical History of Chicago, the microscope and stethoscope of his father; the microscope is said to be the first one brought to Chicago. To Rush Medical College, a microscope presented to Dr. Davis by the students of Rush Medical College. To the Northwestern University, after the death of Mrs. Davis, the sum of $5,000 to be used in establishing a library of zoology, to be known as the N. S. Davis Memorial Library of Zoology. To the John Crerar Library, after the death of Mrs. Davis, the sum of $5,000, to be used in purchasing books on the heart and lungs for a special collection, to be known as the N. S. Davis Library of Medicine.

IOWA

Personal.—Dr. Edward L. Reinicke has resigned as city physician of Dubuque.

Dinner of County Society.—The Scott County Medical Society will give a duck dinner in the Terrace Garden Dining Room of the Kahl Building, Davenport, January 4, preceding the regular meeting.

Society Elections.—Wapello County Medical Society at its annual meeting at Ottumwa elected the following officers: president, Dr. Walter E. Anthony; vice president, Dr. Dell E. Graham, and secretary, Dr. Harry W. Vinson (reelected).——At the annual meeting of the Pottawattamie County Medical Society, held at Council Bluffs, the following officers were elected: president, Dr. Louis L. Heninger; vice president, Dr. John T. McAtee, and secretary-treasurer, Dr. Andrew A. Robertson.

KANSAS

New Campus for Medical School.—A new campus, containing about twelve and one-half acres, has been secured for the clinical branches of the University of Kansas School of Medicine in Rosedale, about a mile south of the present campus. Plans are being developed for the erection of new buildings in the early future.

Tuberculosis Clinic.—A free clinic for the examination of those suspected of tuberculosis was held under the auspices of the Kansas Tuberculosis Association, at the Red Cross Clinic rooms, Wellington, December 20. Drs. Forrell Loveland and Seth Cox were guests of the county medical association and conducted the clinic.

MASSACHUSETTS

Social Service Fund Sought.—A campaign is being conducted for a fund of $30,000 to extend the scope of the sociologic department of the Boston City Hospital. The city makes an appropriation for the medical social work, but the amount is insufficient to cover all the needs, as practically

three fourths of the 70,000 cases annually treated at the hospital require the attention of the social workers.

Tuberculosis Society Organized.—A branch of the Massachusetts Tuberculosis League has been organized in North Essex County to include the towns of Haverhill, Merrimac, West Newbury, Groveland, Georgetown, Boxford, Amesbury, Salisbury, Newbury, Newburyport, Rowley, Ipswich, Andover, North Andover and Methuen. The following officers have been elected: president, Dr. Israel J. Clarke, Haverhill; vice president, Dr. Edward Ganley, Methuen; secretary, Miss Harriet A. Baxter, Merrimac, and treasurer, Mrs. Frederick E. Sweetser, Merrimac.

MICHIGAN

Ludington Health Board Appointed.—A board of health has been appointed at Ludington under the provisions of a charter revision passed five years ago. Dr. Harvey E. Hoffman, health officer, Mayor Peter Madison, H. E. Waits, superintendent of public schools, Mrs. O. J. Wangen, R. N., and Mrs. H. K. Hansen constitute the board of health.

Clinical Society Meets.—At the meeting of the Northwestern Michigan Clinical Society held at Cadillac, December 3, Dr. Elmer L. Eggleston of the Battle Creek Sanitarium delivered the principal address. The following officers were elected: president, Dr. George W. Fraleck, Maple City; vice president, Dr. Arthur S. Rowley, Traverse City, and secretary-treasurer, Dr. Frank Holdsworth, Traverse City.

Meeting of Michigan Hospital Association.—At the recent meeting of the Michigan Hospital Association in Ann Arbor it was unanimously decided to affiliate with the American Hospital Association on the plan provided for the affiliation of state associations. A report of the campaign to recruit pupil nurses for the hospitals of Michigan showed that 6,564 persons had been reached through lectures in high schools and rural schools and through literature distributed at county fairs and elsewhere. Of the forty-one hospital training schools in the state thirty-nine reported that they have derived benefit from the campaign.

MINNESOTA

Venereal Disease Law Enforced.—The Minnesota State Board of Health announces that during October two druggists were successfully prosecuted in St. Paul for selling venereal disease remedies without prescription; each was fined $10 and costs. One complaint was filed against a Minneapolis druggist at approximately the same time but on account of a technical error in the manner of drawing up the complaint the case was dismissed. It is planned to secure further evidence and file a new complaint. A large chain drug store has repeatedly violated the regulation. In November a physician was prosecuted in Minneapolis for failure to report cases of venereal disease treated by him, and was fined $20 and costs. In December another physician was prosecuted in Minneapolis on the same charge and was fined $50 and costs.

MISSISSIPPI

Personal.—Dr. Evan M. Gavin, Ovette, has been appointed a member of the state board of health for the sixth district to succeed Dr. David Walley, Richton, resigned.——Drs. Paul D. Hardin and Lawrence B. Hudson, Hattiesburg, have been appointed resident managers of the Kings Daughters Hospital, Hattiesburg, recently acquired by the Mississippi Methodist conference.

MISSOURI

Visiting Physician Addresses Society.—Dr. B. B. Vincent Lyon, Philadelphia, delivered an address on the treatment of gallbladder infection at the meeting of the St. Louis Medical Society, December 14. A dinner was given at the University Club in honor of Dr. Lyon prior to the meeting.

New Chair Established.—Dr. John Auer, Flushing, N. Y., who has been connected with the Rockefeller Institute since its foundation, has been appointed head of the newly established department of pharmacology in the School of Medicine of St. Louis University. Pharmacology was heretofore included in the department of physiology.

NEVADA

Elko Hospital Nearing Completion.—It has been announced that the new general hospital of Elko County, under construction at Elko at an approximate cost of $130,000, will be ready for occupancy by March 1. The new hospital will be one of the largest in the state

NEW JERSEY

Clinic for Stutterers.—The clinic for stutterers has been opened at the school for crippled children adjoining the City Hospital, Jersey City, every Monday and Thursday evenings at 7:30 under the direction of Dr. Hannah M. Creasey. This initiates the fifth year of activity of the clinic.

NEW YORK

New Regulations Governing Narcotic Drugs.—Two new rulings regulating the prescribing of narcotic drugs have been announced by Walter R. Herrick, Commissioner of State Narcotic Drug Control. One ruling eliminates the use by physicians of the unofficial prescription blanks for administering any narcotic drugs. No such drug can be prescribed by a physician, whether for drug addiction or otherwise, except on official blanks issued by the department. The second regulation compels physicians called to administer to an addict to ascertain who last treated him. This gives the department a complete history of an addict and makes easy his arrest and conviction in case of false representation.

New York City

Personal.—Dr. Ephraim M. Bluestone has been appointed assistant director of the Mount Sinai Hospital.——Dr. Morris H. Frantz has been appointed assistant attending neurologist for the Central and Neurological Hospital.

Smallpox Among Immigrants.—The *Duca d'Abruzzi* of the Royal Italian Mail Liner, arriving in port with 1,400 steerage passengers, December 23, had aboard a case of smallpox. All of the steerage passengers have been detained at Quarantine for two weeks.

Physicians and Nurses Give Benefit.—The medical, surgical and nursing staffs of the Post-Graduate Hospital gave a play entitled "There's a Reason," with the subtitle "An Effervescence in Three Syphons," written by Dr. Marvin Jones, followed by a dinner and dance at Delmonico's on the evening of December 23, in aid of the endowment fund for that institution.

Conviction of Physician Upheld.—It is reported that the United States Circuit Court of Appeals, November 16, affirmed the conviction of Dr. Solomon Rothman for violation of the Harrison Narcotic Law. The physician had been sentenced to two years in the Atlanta penitentiary, but was out on bail pending the appeal. This decision is the first to be rendered in the cases of four physicians convicted of similar offenses in 1919 and 1920, all of whom have appealed.

Health Department Crusades Against Poor Food.—The adulteration and sale of food unfit for human consumption has grown to such proportions that Health Commissioner Copeland has sent out thirty women of the sanitary reserves to inspect restaurants and food stores of the city. Owing to the high prices, the restaurants and food stores hesitate to throw away spoiled food, and attempt to sell it to the unwary public. The health department has 300 of these cases before the courts at the present time, and since the beginning of the year $35,000 has been collected in fines, and 17,256.004 pounds of foodstuffs have been condemned. Since July 1, eighty-eight creameries have been excluded from shipping milk to the city.

Propose War on Rats.—A proposed amendment to the building code, now pending before the Board of Standards and Appeals, would make compulsory the ratproofing of all buildings within 600 feet of the waterfront. According to the estimate of Dr. Victor C. Heiser of the Rockefeller Institute there are 6,000,000 rats in the city, and they cause a property loss of about $35,000,000 annually and are a menace as carriers of bubonic plague. The new measure provides that no certificate for occupancy of any structure within 600 feet of the waterfront shall be issued unless its foundation walls are constructed of concrete or similar material and covered with wire mesh. All windows and other openings must be protected with wire screens, and windows and doors must be arranged to permit fumigation with hydrocyanic gas.

OHIO

Personal.—Dr. James G. Clyne, Cleveland, was severely beaten by robbers, December 8, following his refusal to open a safe. The bandits obtained a medicine case containing narcotics and $50 in cash.

Health Officers Appointed.—Dr. Chester M. Peters, Canton, has been reappointed health officer of Stark County for a term of two years.——Dr. James J. Martin, Bucyrus, has been appointed full-time district health commissioner.

Portrait Donated to Hospital.—A portrait of Dr. Eichenberg was presented to the Cincinnati General Hospital, under impressive ceremonies on the afternoon of December 10, by the brothers of the deceased physician. Dr. John C. Oliver, acting dean of the Cincinnati Medical School made the principal address, Dr. Louis Stricker delivered the presentation address and Drs. Gustav Zinke and E. O. Fennell also spoke. Dr. Eichhenerg was medical director of the institution in 1906, and was a member of the staff of the contagious disease group.

OKLAHOMA

New Officers.—At the December meeting of the Garfield County Medical Society the following officers were elected for 1921: president, Dr. James H. Hays, vice president, Dr. Percy A. Smithe, and secretary-treasurer, Dr. Frank Glenn Francisco, all of Enid.

Health Instruction Fostered.—Arrangements have been made between the Oklahoma Public Health Association and the University of Oklahoma for the distribution of slides, moving picture films and standard lectures on public health topics. The distribution will be made by the visual instruction department of the state university.

Sanatorium Contract Awarded.—The contract for the construction of the buildings at Talihina for the state tuberculosis sanatorium, for which an appropriation of $100,000 was made by the legislature, has been awarded. Two other tuberculosis sanatoriums are located in the state, one at Clinton, and the other for negro patients at Boley.

Open Air School Established.—The first open air school of Oklahoma City was opened early in November at Willard School, with sixteen pupils in attendance. Dr. Harry H. Cloudman, city school physician, will have direct supervision of the school. The project was made possible through the cooperation of the Oklahoma City Tuberculosis Society which furnished the cots, blankets, open air garments, food for lunches and a nurse attendant.

OREGON

New Officers.—At the meeting of the Central Willmette Medical Society, December 3, the following were elected officers for the ensuing year: president, Dr. Ralph L. Bosworth, Corvallis; vice president, Dr. William H. Davis, Albany, and secretary-treasurer, Dr. Emile C. Joseph, Corvallis.

County Denies Responsibility for Leper.—The city of Portland was recently notified by Dr. Harry Cliff, county physician, that it must resume the responsibility for the care of Louie Poy, a Chinaman affected with leprosy, who has been under care at the county hospital for the last year. It is probable that a special building will be erected for the leper on the grounds of the city's new contagious disease hospital on the Gresham highway.

PENNSYLVANIA

Memorial Hospital Opened.—The Wayne Soldiers' and Sailors' Memorial Hospital at Honesdale was opened, October 1, with a capacity of twenty-five beds.

Personal.—Dr. J. E. Wurster has been appointed chief of the state venereal clinic at the Williamsport Hospital.—— Dr. M. L. Raemore has been elected to the surgical staff of the Williamsport Hospital to fill the vacancy caused by the death of Dr. G. Franklin Bell.

Milk Under Health Department Control.—Legislation to insure the purity of the milk supply will be drafted and submitted to the next legislature as the result of a conference held, December 22, by Fred Rasmussen, secretary of agriculture and Dr. John B. McLean, deputy state health commissioner, and representatives of large producers of milk, the milk dealers' association and the state grange. The bill will place under the control of the department of health the state's supply of milk from the time it leaves the cow until it reaches the consumer. At present, control of milk is vested in the agricultural department, and dealers and producers have been at odds for some time as to what department should regulate the milk supply.

Philadelphia

Clubmen Aid Hospital.—The Poor Richard Club raised $300 for the Children's Hospital, Ninth and Pine Streets, at its annual Christmas dinner in the Camac Street clubhouse.

Personal.—Edgar Fahs Smith, Ph.D., former provost of the University of Pennsylvania, has been elected president of the American Chemical Society, and will assume office January 1.

Impure Gelatins Found.—An order was sent, December 7, by James Foust, state food commissioner, to the American Agricultural Chemical Co., Detroit, to remove immediately from the markets of this commonwealth all gelatin of the Silver Label Brand which is adulterated with sulphur dioxid.

Public Health Lecture.—The second public health lecture of the course given by the School of Hygiene and Public Health of the University of Pennsylvania was delivered, December 18, in the Laboratory of Hygiene, by Dr. Dorothy Child, formerly chief of division of child hygiene, State Department of Health, on the subject of "Child Hygiene; the Correct Management of the Infant Population."

Additions to University Medical Faculty.—Three important additions to the staff of the medical schools were announced by the board of trustees of the University of Pennsylvania, at its regular meeting, December 20. Dr. J. Harold Austin, formerly with the Rockefeller Institute, has been appointed research professor of medicine to succeed Dr. Richard M. Pearce, resigned; Dr. H. Cuthbert Bazett has been engaged as professor of pathology, and Dr. Paul A. Lewis a member of the faculty of the Phipps Institute, has been appointed to the new chair of experimental pathology.

RHODE ISLAND

Fines for Narcotic Violation Paid.—It is reported that the case of Dr. Charles E. Chagnon, Arctic, who was convicted a year ago of illicit traffic in narcotics, has been finally settled in the United States district court by the payment of a fine of $1,700. Dr. Chagnon was sentenced to pay a fine of $100 on each of seventeen counts, and later withdrew his appeal from that verdict.

TENNESSEE

Health Officer Appointed.—Dr. John J. Lentz was elected health officer of Davidson County at a special session of the county board, to succeed Dr. John R. Thompson, deceased.

County Supports Hospital Bed.—Through the efforts of the Brownsville Chapter, D. A. R., funds have been raised to support a bed in the Crippled Children's Hospital, to be known as the Haywood County bed.

TEXAS

College Not Recognized.—A letter from the secretary of the Texas State Board of Medical Examiners states that at a recent meeting of that board recognition was withdrawn from the Kansas City College of Medicine and Surgery, Kansas City, Mo.

Typhus Fever at Temple.—Several cases of a mild form of typhus fever have been reported recently from Temple. None of the patients have had serious symptoms of the disease, which, it is presumed, was imported from Mexico by laborers employed as cotton pickers.

WASHINGTON

Chest Clinic at Kelso.—A tuberculosis clinic was held at Kelso, early in December, under the auspices of the Washington Tuberculosis Association. Dr. Raymond J. Cary, Elma, delivered the principal lectures and supervised the work of examination.

Physicians Support Health League.—Members of the Spokane County Medical Society pledged more than $4,000 to aid the campaign of the Washington League for the Conservation of Public Health against quacks and cranks who are a menace to community health. The society is patterned after a society with a similar name in California. Dr. Herman P. Marshall is president of the league.

GENERAL

Gastro-Enterologists Elect.—At the meeting of the Southern Gastro-Enterological Association held recently at Louisville, Ky., the following officers were elected: president, Dr. George McCallum Niles, Atlanta, Ga.; vice president, Dr. Marvin Henry Smith, Jacksonville, Fla., and secretary-treasurer, Dr. John W. Fitts, Atlanta, Ga. (reelected).

Meeting of Surgical Association.—At the thirteenth annual meeting of the Western Surgical Association, held recently at Pasadena, Calif., Dr. Charles Daniel Lockwood, Pasadena, was elected president, Dr. Harry Ritchie, St. Paul, vice president, and Dr. Warren A. Dennis, St. Paul, secretary (reelected). The next annual meeting will be held at St. Louis.

Tri-State Society Elections.—The Tri-State Medical Society of Arkansas, Louisiana and Texas, at its sixteenth annual session at Texarkana, Texas, elected the following officers: president, Dr. Frank Walke, Shreveport, La.; vice presidents, Drs. Leonce J. Kosminsky, Texarkana, Ark., Spencer A. Collom, Texarkana, Texas, and John A. Hendrick, Shreveport, La., and secretary, Dr. Nettie Klein, Texarkana, Texas. Shreveport, La., was chosen as the place for the 1921 meeting.

Railway Surgeons Meet.—The thirteenth annual meeting of the Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association was held in Minneapolis, December 17-18, under the presidency of Dr. Eric P. Quain, Bismarck, N. D. The following officers were elected for the ensuing year: president, Dr. George F. Thompson, Chicago; vice president, Dr. Pierre C. Pilon, Paynesville, Minn., and secretary-treasurer, Dr. John H. Rishmiller, Minneapolis. The next meeting will be held in Chicago in October, 1921.

Report of Survey of Cripples Available.—The New York Committee on "After-Care of Infantile Paralysis Cases" has published and distributed a report entitled "The Survey of Cripples in New York City." It is desired to send this report to those in a position of responsibility in agencies for cripples and to all those who might have a general interest in cripples and have plans for their aid. Any one desiring copy of the report should address Robert Stuart, Director, 69 Schermerhorn Street, Brooklyn.

Remittance Slips.—Two weeks ago, a pink remittance slip for 1921 subscription and fellowship dues was inserted in each copy of THE JOURNAL, and an editorial explanation appeared in the same issue. Thousands have already returned their slips with remittance. This cooperation means a large saving to the Association for postage, clerical expense, etc. For the convenience of those who have not yet remitted, another slip is inserted in this issue of THE JOURNAL. This may be used not only in remitting JOURNAL A. M. A. subscriptions but also for ordering any of the special journals described on advertising page 8 of this issue. Those who have already remitted will of course ignore the slip in this issue.

Rockefeller Foundation Aid to Public Health.—A program for public health work in Czecho-Slovakia has been announced by the International Health Board of the Rockefeller Foundation, following an agreement reached with the Czecho-Slovakian Government. The agreement provides for the assignment of an American expert in public health administration to the Czecho-Slovak Government, fellowships for a select group of young Czechs in public health field work, development of a national public health laboratory service, and for a Czech commission to study public health administration in the United States and England. The agreement is based on recommendations made by Dr. Frederick F. Russell, following studies made by him in Czecho-Slovakia last July. Nine representatives from Czecho-Slovakia have been awarded fellowships to pursue courses in public health, hygiene and preventive medicine in the United States during 1920-1921.

Bequests and Donations.—The following bequests and donations have recently been announced:

A. Barton Hepburn Hospital, Ogdensburg, N. Y., a gift of $330,000, by Mr. A. Barton Hepburn.

First National Bank of Columbia City, Ind., $6,000, to be used for the erection of a hospital, by the will of Mrs. Elgin Dunlap, Pottstown, Pa.

Kentucky State Medical Society, several acres of land adjoining the Eastern Kentucky State Normal School and her residence in Richmond, Ky., to be converted into a hospital in memory of her father and grandfather, by the will of Mrs. William Irvine.

Anna Jacques and Homeopathic hospitals, Newburyport, Mass., each $10,000, to establish a Daniel Dole Adams fund, the income from which is to be used for the maintenance of a free bed, by the will of Daniel Dole Adams.

City Hospital, Indianapolis, $10,000, on condition that a similar sum be raised by the city, by the will of James A. Lane, Indianapolis.

Society of the Lying-in Hospital of the City of New York and St. Luke's Hospital, New York, each $25,000, for the maintenance of a free room to be known as the Stetson Room, and Champlain Valley Hospital, Plattsburg, N. Y., $10,000, for a free bed in perpetuity to bear the name of the donor, by the will of Francis Lynde Stetson, New York.

Arkansas Children's Home Society, $50,000, for building a children's hospital, by the will of E. S. Hilliard, Eudora, Ark.

LATIN AMERICA

Surgical Pavilion Donated by Jockey Club.—The new surgical pavilion at the Hospital Alvear, Buenos Aires, the gift of the Jockey Club, was recently inaugurated and Dr. Celesia placed in charge.

Election of Officers.—The Santiago Medical Society has elected for the year 1920-1921 the following officers: Dr. E. González Cortés, president; Dr. L. Vargas Salcedo, vice president; Dr. L. Prunés and Dr. E. Malbrán, secretaries, and, as editors of the *Revista Médica de Chile*, Dr. C. Charlín C. and Dr. E. Prado Tagle.

Personal—The *Archivos Brasileiros de Medicina* mentions that the medical faculty of São Paulo has suspended Prof. W. Haberfeld for six months for his derogatory remarks about the men and institutions of Brazil.——Prof. G. Aráoz Alfaro of Buenos Aires has been delivering a course of lectures at Assunción, Paraguay, at the request of the medical faculty.

The Guatemala Medical Society.—The inaugural meeting of the Sociedad de Medicina y Cirugía de Guatemala was held Sept. 16, 1920, on the ninety-ninth anniversary of the independence of Guatemala. The following officers were elected: president, Dr. M. J. Wunderlich; vice president, Dr. Salvador Ortega; secretaries, Dr. J. Fernández de León and Dr. M. Santa Cruz. Other members of the board are Dr. R. Mauricio, Dr. Lizardo Estrada and Dr. N. Gálvez. The *Escuela de Medicina*, now in its twenty-second year, is to be the organ of the society.

Insanity in Colombia.—In a paper entitled "Degeneración Colombiana," Dr. Alfonso Castro of Medellín declares as exaggerated recent assertions regarding racial degeneration in Colombia. He admits that the number of committed insane patients in the province of Antioquia increased from 231 in 1915, to 276 in 1919, but calls attention to the fact that a similar increase was observed in other countries. While the number of suicides has also increased, being now about 14.5 per million of inhabitants in one province, and 21 in another, this rate is very low as compared with European figures.

Rabies at El Salvador.—The *Archivos del Hospital Rosales*, edited by Dr. R. V. Castro, publishes a résumé of the work of the Antirabic Institute from 1914 to April, 1920. During that time 227 treatments were given; two deaths occurred, a mortality of 0.88 per cent. Most of the wounds were caused by dogs (94.66 per cent.), cats coming next (2.91 per cent.). The frequency of the localization of the wounds was in the hands (29.14 per cent.), legs (20.1 per cent.), forearms (10.5 per cent.), feet (9.5 per cent.), arms (7.03 per cent.), thighs (5.02 per cent.) and face (3.01 per cent.). The author of the paper, Dr. E. Mendéndez, advocates the use of prophylactic measures against dogs.

Prizes Awarded by Brazil Academy of Medicine.—At a recent meeting of the Academia Nacional de Medicina at Rio de Janeiro, the prize founded by Dr. F. dos Santos for the best work on some Brazilian plant was awarded to Sr. Dias de Silva, already noted for his works on the natural history of Brazil. The Alvarenga prize was presented to Dr. Leonidio Ribeiro, Jr., for a work on "Pain from the Medicolegal Standpoint." The Durocher prize was not awarded as none of the competing articles complied with the requirements. Among the twenty subjects offered as topics for competing articles next year are vagotonia in the tropics; radium treatment in ophthalmology, and dystrophia of the bones in children.

FOREIGN

The Revilliod Memorial.—A bronze profile portrait of Prof. Leon Revilliod, mounted on marble, was recently unveiled in the amphitheater of the public hospital at Geneva, Switzerland, two years after his death. The balance of the fund collected for the memorial was given to the Revilliod Fund endowed by the family, the income from which is to be used for teaching, for research, or for the publications of the medical clinic.

Child Welfare Congress.—The Second International Child Welfare Congress has been officially announced to convene at Brussels, July 18 to 21, 1921. The first meeting of the kind was held in 1913, and is believed to have contributed materially to the progress of child welfare movements in different countries in the last few years. The address of the secretary general is M. Henri Velge, 27 rue de Turin, Brussels, and the subscription fee is 25 francs.

Memorial Erected to Discoverer of Morphin.—A large memorial has been erected recently at the burial place of F. Sertürner at Einbeck, Germany, who in 1816 first established the identity of morphin and proved its basic nature as well as its poisonous effects. Morphin had been separated by Derosne in 1803, but was then mistaken for narcotin. Sertürner was a pharmacist's assistant at Einbeck at the time of his discovery, and later had his own pharmacy at Hameln.

Medical Aspect of Strikes in Public Utilities.—The *Deutsche medizinische Wochenschrift* states that during the strike of the electricians in Berlin, November 6 to 11, the street cars, telephones and delivery service being suspended, the superin-

tendent of one of the large public hospitals finally publicly announced that he would have to send the sick inmates home, as the shutting off of the electricity made it impossible to heat the rooms and care for the sick, and that the gravely sick would be placed in the most serious danger. On this ultimatum the electricians consented to supply the hospitals with electricity. This reduced the evil somewhat for physicians, but many could not get to their patients, and the sick in private homes suffered still. This was rendered still worse by the strike of the gas workers. November 9, the railroad workers and others throughout the country stopped work to celebrate the anniversary of the revolution. At Chemnitz and Bremen the physicians announced at once to the public that if the strike of utilities continued the physicians would be compelled to stop their work too, and with this they succeeded in getting the leaders of the strike to supply the water works, the hospitals and the telephones with power. The editorial states further: "So long as present conditions continue, it is the duty of physicians in their sphere to combat this strike fever without letting themselves be deterred by too ideal considerations."

Government Services

New Type of Hospital Tent

Work has begun on the development of a new ward hospital tent for field service. During the World War it was found that the tent now in use had many disadvantages. The canvas roof attracted enemy aerial bombardment and the center poles made it difficult to carry patients on stretchers into the tents. Hospital organizations caring for patients under canvas experienced certain other difficulties, which, it is hoped the new hospital tent will eliminate.

Army Medical Department Schools

Centralization of special schools of instruction for the personnel of the Medical Department of the Army will shortly be effected by an order of the Adjutant General. The Army Medical School, Washington, D. C., and the Medical Field Service School, Carlisle, Pa., will be maintained. The Army Field Service and Correspondence School of the Medical Department, operating in connection with the General Service Schools at Fort Leavenworth, Kan., will be transferred to the Medical Field Service School at Carlisle, thus effecting a union of all the branches of instruction of the Army Medical Department.

Reserve Officers Training Corps Unit

Major John T. Aydelott has been detailed as professor of military science and tactics at the Jefferson Medical College, Philadelphia, in consequence of the approval of that school's application for the establishment of a Reserve Officers Training Corps Unit. The course will be inaugurated at once under the authority of the Surgeon-General. Circulars will soon be sent to every Class A medical school in the United States appealing to these institutions to establish courses for reserve medical officers. Certain changes will be made in the requirements in order to encourage students to take the military instruction. Another revision of the regulations is the establishment of the summer encampments after the sophomore year, instead of the junior year, as was originally contemplated.

Measles in the Army

Comparative statistics of the incidence of measles in the World War and previous wars have just been issued by Surgeon-General Ireland. The report discloses that the admission rate for the Civil War was almost twice as high, and that for the Spanish-American War one-third higher than during the World War. The death rate was two and one-half times as high during the Spanish-American War, but this low rate was effected by the fact that the troops were operating in the summer and in a tropical climate, where the death rate for American troops was always low. Measles was highly prevalent among the Southern troops during the Civil War, especially among those from rural districts. The experience during these wars indicates that measles is practically certain to become epidemic whenever a large number of men from isolated communities are gathered together.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 6, 1920.

Penalizing the Communication of Venereal Disease

The report has been issued of a select committee of the House of Lords and House of Commons appointed to consider the three criminal law amendment bills presented to the upper chamber by the government, the bishop of London and Lord Beauchamp. The committee took the government bill as a basis and amended its provisions so as to evolve a single measure. They were impressed with the evidence of several witnesses who urged that the communication and prevention of venereal disease should be dealt with by a measure for the protection of the public health and not under the criminal law. It was stated by a representative of the Ministry of Health that the question whether it was advisable to invoke the aid of the criminal law in the campaign against venereal disease was really one for the home secretary, and that the provisions of the government bill might have a certain moral or deterrent effect. Accordingly, the committee determined to retain the following clause in the government bill: "A person who is suffering from a venereal disease in a communicable form shall not have sexual intercourse with any other person, or solicit or invite any other person to have sexual intercourse with him or her. 2. If any person acts in contravention of this section, that person shall be liable on conviction to imprisonment with or without hard labor for a term not exceeding two years. Provided that: (*a*) A person shall not be convicted if that person proves that he or she had reasonable grounds to believe that he or she was free from venereal disease in a communicable form at the time of the alleged offense; and (*b*) no person shall be convicted upon the evidence of one witness unless such witness be corroborated in some material particular. 3. A person charged with an offense shall, if he so requires, be remanded for a period not less than a week for the purpose of such medical examination as may be requisite for ascertaining that such person is suffering from venereal disease in a communicable form. The defendant shall be informed of his right to be remanded as aforesaid and that he may be examined by his own physician or by the medical officer of the prison."

Dr. Mercier's Bequest for a "Chair of Rational Logic"

The late Dr. Charles Mercier, the alienist, was a logician and published a book in which he attacked with great vigor the logic of the schoolmen. In his will he has made provision for the establishment of a chair in these terms: "Scheme for the establishment of a professorial chair of rational logic and scientific method. The purpose of this foundation is that students may be taught, not what Aristotle or any one else thought about reasoning, but how to think clearly and reason correctly, and to form opinions on rational grounds. The better to provide that the teaching shall be of this character, and shall not degenerate into the teaching of rigid formulas and worn-out superstitions, I make the following conditions: 'The professor is to be chosen for his ability to think and reason and to teach, and not for his acquaintance with books on logic or with the opinions of logicians or philosophers. Acquaintance with the Greek and German tongues is not to be an actual disqualification for the professorship, but in case the merits of the candidates appear in other respects approximately equal, preference is to be given first to him who knows neither Greek nor German; next, to him who knows Greek but not German; next, to him who knows German but not Greek, and last of all, to a candidate who knows both

Greek and German. The professor is not to devote more than one twelfth of his course of instruction to the logic of Aristotle and the schools, nor more than one twenty-fourth to the logic of Hegel and other Germans. He is to proceed on the principle that the only way to acquire an art is by practicing under a competent instructor. Didactic inculcation is useless by itself. He is therefore to exercise his pupils in thinking, reasoning and scientific method as applied to other studies that they are pursuing concurrently, and to other topics of living interest. Epistemology and the rational grounds of opinions are to be taught. The students are to be practiced in the arts of defining, classifying and the detection of fallacies and inconsistencies. The principle of causation is to be taught as a process occurring in nature and applicable to material things, and not as a notion in the minds of philosophers. Subject to these requirements, a wide discretion is to be allowed to the lecturer.'"

The Fellowship of Medicine and Postgraduate Association

At the annual meeting of the Fellowship of Medicine and Postgraduate Medical Association, the honorary secretaries reported that the work had been carried on without intermission during the current year and that the facilities for graduate education provided were supplying a real need. Since the beginning of the year, 365 graduate students have availed themselves of the various courses, etc., the majority taking tickets for two and three months, and some for even five and six. The cosmopolitan work of the fellowship is shown by the various nationalities in the list: Australia, 40; Canada, 33; South Africa, 4; Colonial Service, 11; Indian Medical Service, 10; India, 29; United States, 38; South America, 4; Malta, 2; Egypt, 3; Switzerland, 5; Norway, 4; Italy, 2; Spain, 3; Japan, 2; Holland, 4; Denmark, 3; Serbia, 2; Roumania, 1; Royal Navy, 12; British Isles, 153. Of the foregoing, forty-eight are at present in London. At first sight these figures may seem disappointing when compared with the number enrolled last year; but it must be borne in mind that the year 1919 was exceptional owing to the large number of medical officers passing through London on their way home from service abroad. No fewer than 421 of the 663 physicians who availed themselves of the fellowship last year were from the United States and the British dominions across the sea. It is anticipated with confidence that as the opportunity for utilizing the wealth of clinical material in the first city in the Empire is developed and more fully known, the number of graduate students will increase. Situated as it is, the meeting place of East and West, London is the ideal center for graduate medical work. Already it may be said that the area served by the fellowship literally reaches from pole to pole, as inquiries have been received from such distant regions as Iceland and the southernmost states of South America. The bulletin which is published weekly and forwarded at short intervals to the various universities, medical societies and journals abroad has given wide publicity to the work of the fellowship. During the year the fellowship has cooperated with Cambridge University in connection with courses for the new diploma in radiology and electrology and in regard to the diploma in psychologic medicine. Facilities for graduate instruction have been given by five additional hospitals. Several short courses of lectures have been given and were much appreciated. These included infant welfare at St. Marylebone Dispensary, by Dr. Pritchard; demonstrations in ophthalmology at Moorfields Hospital, by Mr. Hepburn; gynecologic talks at the Middlesex Hospital, by Mr. Bonney, and special lectures at the Cancer Hospital. It is proposed to arrange similar short courses lasting two or three weeks in various branches of medicine and surgery, so that at least one course will be in progress at any given time.

PARIS

(From Our Regular Correspondent)

Nov. 26, 1920.

The New Treatise of Medicine

When, in 1891, the "Treatise of Medicine" by Charcot, Bouchard and Brissaud appeared, it was hailed as a great event. Up to that time there had been no complete medical treatise in the French language, and the physicians who could not content themselves with the perusal of the manuals were obliged to resort to original articles and to special monographs. The three masters in the French medical world who took on themselves the editing of the foregoing treatise being no longer living, the "New Treatise of Medicine," Part 1 of which has just appeared, is published under the direction of G.-H. Roger, dean of the Paris Faculty of Medicine, and F. Widal and Pierre Teissier, professors in the same institution. They are assisted by a large corps of collaborators, among whom are a number of professors of foreign universities. For example, the article "Trench Fever," which is to appear in Part 3, has been put in the hands of Dr. Richard P. Strong, professor of tropical medicine in the School of Medicine of Harvard University.

Modern Treatment for Scoliosis

At the second congress of the Société française d'orthopédie, recently held in Paris, Dr. Estor, professor of pediatric clinical surgery in the Montpellier Faculty of Medicine, gave an interesting report on the subject of scoliosis. He commenced by saying that, since the time of the appearance of Abbott's works, there had been considerable change in the treatment of scoliosis, and with the changed therapeutic procedure has come a new classification of the various types of scoliosis according to the nature of the fixation. Scoliosis that is completely reducible, that is partly reducible and that is irreducible must all be studied separately. Scoliosis of the third type, while irreducible in extension, may possibly be partially reduced in flexion, and often they may pass from the third to the second type. Estor called special attention to the necessity of taking exact measurements, as only in such manner can a judgment of the results be formed. He discards appliances if they are too complicated and unnecessarily precise in their adjustments. The measure of the curvatures of the two lateral halves of the trunk, of the thickness of the chest, photography and roentgenography constitute the essential means of forming a judgment. Plaster jackets are especially useful. Treatment must be begun as early as possible. A preparatory treatment, which suffices for benign cases, precedes the use of plaster jackets. Gymnastic exercises without the use of apparatus are better than exercises with the complicated and expensive apparatus in use in foreign countries. Respiratory exercises are of exceedingly great value. Medical treatment must not be forgotten, as it combats general weakness and anemia, and builds up the system that has become exhausted by too rapid growth. Under this head iodids, arsenic, phosphorus preparations and organotherapy may possibly be indicated.

While discussing the procedures associated with the Abbott method, Estor described, at the same time, his own method, which is characterized by the flexure of the spine, accompanied by the elevation of the arm as high as possible on the concave side and the lowering of the other arm as much as possible, the two upper limbs thus being on the same vertical line. Of fourteen cases treated by Estor, only in one was overcorrection secured; the other cases were only ameliorated.

Whatever procedure may be used, recurrences are extremely frequent. This is mainly due to the lack of overcorrection, which is but rarely obtained, and to the insufficient duration of the treatment. Postoperative treatment (dorsal decubitus,

celluloid jacket, respiratory gymnastics) must also play an important part.

The surgical method, with the use of the bone graft, following the Albee procedure, is not much in vogue in France. In spite of the interest that has been awakened in the Albee method by reason of its perfectly regulated technic, aside from paralytic scoliosis, the indications for the bone graft are few in number.

Legal Aspects of Attacks by a Pharmacist on the Professional Reputation of a Physician

In the Annales d'hygiène publique et de médecine légale, E.-H. Perreau, professor of the Faculty of Law at Toulouse, discusses the delicate question as to what extent a pharmacist has the right to criticize medical prescriptions. In filling a prescription exactly as it reads, a pharmacist can be called to account only on two grounds; namely, in case it does not meet with the regular requirements, and in case the prescription is dangerous for the patient. Under either of these circumstances he has the right to refuse to fill a prescription, in which case he should state his reasons in moderate language. If, in his charges, he goes beyond these limitations, he renders himself liable if he injures the reputation of the physician.

Whenever a pharmacist, on the occasion of filling a medical prescription, makes an allegation, either directly or impliedly, prejudicial to the reputation of the physician who signed the prescription, and not indispensable in connection with his own personal responsibility in the matter, he commits a misdemeanor rendering him liable to make pecuniary amends to the physician so damaged. If, in his opinion, a given prescription is inapt, he can, before filling it, refer it back to the physician who signed it, in order to assure himself that no error obtains; but he must refrain from declaring to the client that, in his opinion, the prescription is inapt. He does not possess in the matter the scientific competence that would permit him to pass judgment on the conduct of the physician. Even the mere refusal to fill a prescription, though no reason for the refusal is assigned, is sufficient to awaken doubts prejudicial to the skill of the physician who gave it, and therefore constitutes likewise a misdemeanor on the part of the pharmacist for which he becomes pecuniarily liable.

Furthermore, assuming that the pharmacist's professional responsibility is involved; that is, supposing the matter comes under the head of the two cases cited above, he must nevertheless refrain from all comment of a disagreeable nature and from all critical remarks reflecting on the reputation of the writer of the prescription, such remarks being absolutely useless as regards his own responsibility.

Aside from being subject to the assessment of damages based on the pecuniary interests involved, the delinquent is usually liable, in addition, to penalties imposed by the tribunaux de répression, which have jurisdiction in cases involving defamation and public injury, and also in injury not public.

BUCHAREST

(From Our Regular Correspondent)

Nov. 10, 1920.

The Law of Anticipation in the Insane

According to Dr. Kener, director of a large lunatic asylum, insanity, when transmitted, occurs at an earlier age in each successive generation. Of 250 pairs of parents and offspring, 39 per cent. of the offspring were found to have had their first attack of insanity before the age of 25, a considerable portion being congenital imbeciles. Mothers transmitted much more frequently than fathers, and daughters are affected more often than sons; also the offspring are affected at about half the age of the parent, being in most instances either congenital imbeciles or cases of adolescent insanity. Similar inheritance was very striking in recurrent periodic insanity and in paranoia. The study of pedigrees reveals the differences of manifestation of a neuropathic taint. In some members of the tainted stock it may appear as chorea, epilepsy, migraine, neurasthenia, exophthalmic goiter or diabetes; in others, it may be a matter of temperament, eccentricity, exaltation, melancholy or feeble will power. He said that a neurotic inheritance is liable to bring about the establishment of certain morbid mental habits; and when such an inheritance is strong, there is great risk of the development of organized delusions. Proper care may keep the latter tendencies in check, but an improper environment in which there is temptation to drink, evil companions, and the like, may result in insanity, crime or suicide. In a third generation these inborn tendencies may appear in a more intensive form, resulting in congenital imbecility and feeblemindedness. Dr. Kener has found this to be the case when two first cousins, not insane but coming of a tainted stock, have married and borne children.

The Diagnostic Value of the Wassermann Reaction

Dr. Adolf Erdös of Oradea-Mare, Transylvania, Roumania, who during the war had under his care a military venereal hospital with a turnover of between 18,000 and 20,000 syphilitic cases a year, had ample means to investigate the diagnostic value of the Wassermann reaction, and at a recent meeting of the Transylvanian Medical Club pointed out that while a positive reaction may indicate that the individual is syphilitic, it does not prove that the lesion in question is syphilitic. This caution is necessary, for instance, with lesions of the tongue, in which epithelioma often supervenes on syphilitic leukoplakia.

With regard to the effect of treatment on the reaction, energetic mercurialization begun early and long continued restores the serum to its normal condition. Early commencement and longer duration of treatment are important factors in converting a positive into a negative reaction. A positive reaction in a latent case is an indication for further treatment. A positive reaction in a mother who has borne an apparently healthy child is an indication for treatment of the child also. The question remains as to the value of the reaction in determining the duration of treatment. The reaction may be positive when symptoms are absent. This may be due to lesions of the internal organs, but not always, as the virus is known to remain alive (in monkeys) for a long time without producing obvious changes in the tissues. At the same time, the spirochetes may pervert tissue metabolism so as to lead to premature senescence without obvious lesions. It is best to regard a positive reaction as a sign that gross effects are liable to occur at any time, and hence as an indication for further treatment.

A Case of Cantharides Poisoning

A man, aged 54, previously healthy, who was to be married the next day to a girl of 23, took some pills prepared by a friend, a chemist, to promote success with his bride. The pills contained a large dose of cantharides. The man was taken suddenly ill with priapism, sickness and faintness, hematuria, pain in the stomach, back and intestine, and intense thirst, and died two days afterward. The symptoms, as narrated at the inquest, were: a distinct discoloration of the whole surface of the body, amounting to a kind of reddish brown, with a dark almost black patch extending across the bridge of the nose on to both cheeks, the color becoming deeper in hue later; blueness of the tips of the fingers and the mucous surfaces of the mouth; suppression or retention of urine; pulse, 120; conjunctivae, yellow; pupils, contracted. At the postmortem examination the spleen and kidneys were found to be acutely inflamed, the intestine, slightly; there

was deep staining of the inner surface of the heart and the arteries; there was no peritonitis; the bladder was full of urine, blood stained and albuminous; a small amount of cantharidin was obtained from the urine.

The Infectivity of Tuberculosis

The Bucharest Commission on Tuberculosis issued its report in November, giving definite answers to certain definite questions submitted to the commission. These answers are derived from a mass of experiments carried out on behalf of the commission at a huge government farm, and may be thus summarized:

1. In many cases, human tuberculosis is identical with the bovine disease.
2. Mammals and man can be reciprocally infected with the disease.
3. Tuberculosis can be communicated to man from infected cow's milk or tuberculous meat (pork or beef); but the danger from fowls, geese, turkeys is negligible.
4. There are three distinct types of tubercle bacilli: avian, bovine and human.
5. The bacillus of lupus is of the bovine order, but is of a modified type and differs in certain respects from the usual bovine bacillus found in cattle.

Rat Extermination

The recent scare of plague in Turkey and also in some parts of Bulgaria and Greece has emphasized the need that exists for some safe and sure method of exterminating rats, which are, as is generally known, a common medium by which plague is introduced or spread. The ordinary methods of shooting, hunting by dogs, cats or ferrets, and catching in traps are not wholesale enough, while poisoning with arsenic, phosphorus, strychnin and barium is dangerous to other animals, and may cause a nuisance or danger to the health of human beings by reason of the poisoned rats dying and remaining under floor-boards and afterward putrefying. Consequently, bacteriologists have suggested some form of disease, which is slowly fatal to rats and other rodents but harmless to other animals, being spread among the rats, which in their turn would continue to spread the disease by infection from one to another. There are diseases which affect only animals of certain species, as hog colera and swine fever, and bacteriology has succeeded in furnishing germs that cause disease (affecting the intestine) in rats and other rodents, but apparently, so far as we can judge at present, not in other animals. These bacillary poisons or toxins vary somewhat, at least in name. Those that have already been introduced and are spoken of more or less as effecting the purpose mentioned are: ratin, rathite, Liverpool virus (English make), rattintod (German) and ratomurin (Hungarian). The bacilli are cultivated on various mediums, and mixed with food that rats eat. The effect of the bacillus or its toxin on the rat is to produce intestinal (infectious) disease, spread through the feces to other rats through the medium of food. Reports as to success in practice of these bacillary or microbial poisons are at present contradictory, and the results vary—probably owing to the varying potency of the toxins used, and the varying susceptibility of the rats. Some rats may be immune, or may become so when fed with small quantities of a diluted culture or a culture of low toxicity.

The Law Against Illegal Use of a Medical Title

A limited company was considered as a "Dental Sanatorium Limited" in Bucharest and was under the direction of a non-registered dental surgeon, who described himself as "M.D., U. S. A., Specialist, Managing Director." An injunction was applied for by the Society of Dental Surgeons and was granted, it being held that, although the limited company (société anonyme) was not a "person" within the meaning of the medical act, the title used, viz., "M.D., U. S. A., Specialist, Managing Director of the Dental Sanatorium," inferred that the director was a practitioner of dental surgery, contrary to the provisions of the act, which says that the head of a dental surgery can be only a dental surgeon, who may employ as assistant any general practitioner as to his liking, and that consequently, an injunction must be granted restraining both the company and the managing director from using any description of such director indicating that he was a dental surgeon or a practitioner of dental surgery or any brand thereof.

Marriages

JOSEPH ALTON HOEGEN, Lieut., M. C., U. S. Navy, to DR. EDNA THOMAS MCHUGH of Monticello, Iowa, at Savannah, Ga., Jan. 24, 1920.

HENRY MARTYN FIELD to Miss Florence Marion Cassidy, both of Princess Anne, Md., December 15.

A. ALDRIDGE MATTHEWS, Spokane, Wash., to Miss Carrie Hopkins of Seattle, at Spokane, November 17.

CHARLES THOMPSON FISHER to Miss Ellen Dale McMaster, both of Norwood, Mass., December 15.

WALTER WILLIAM HORST, Globe, Ariz., to Miss Edna L. Bundy of Lima, Ohio, November 25.

SAMUEL PHILIPSON, Brooklyn, to Miss Edith Alderman of New Haven, Conn., December 5.

JOE MULLINEAUX NEAL to Miss Ann Dahl, both of Minneapolis, December 8.

Deaths

Henry J. B. Wright ⊕ San Jose, Calif.; Cincinnati College of Medicine and Surgery, 1875; Jefferson Medical College, Philadelphia, 1881; aged 69; a member of the board of health and health officer of San Jose; one of the founders of the Santa Clara County Medical Society, and for many years president of the California Historical Society; died, December 15, from myocarditis.

Squire LaRue Helm, Lexington, Ky.; Louisville, Medical College, 1874; aged 66; a member of the Kentucky State Medical Association; at one time city and county physician of Lexington; formerly superintendent of the Kentucky Institution for Feeble-Minded, Frankfort; died at a hospital in Baltimore, December 9, following an operation.

Alexander Franklin Jones, Cameron, N. C.; North Carolina Medical College, Charlotte, 1915; aged 29; lieutenant, M. C., U. S. Army, with service overseas; was instantly killed, December 10, when the automobile in which he was riding was struck by a passenger train at a grade crossing.

John Oliver Marble, Worcester, Mass.; Georgetown University School of Medicine, Washington, D. C., 1868; aged 81; a member of the Massachusetts Medical Society; an employee of the War Department from 1864 to 1866, and of the Treasury Department from 1866 to 1869; died, December 9.

Frank Bond Rosson, San Francisco; Vanderbilt University Medical School, Nashville, Tenn., 1915; aged 28; assistant pathologist at the University of California, San Francisco; died in a hospital at Los Angeles, December 2, following an operation for mastoiditis.

William H. McIlvain, Kenton, Ohio; Western Reserve University, Cleveland, 1870; aged 78; who served with the Eleventh Indiana Volunteer Infantry during the Civil War; a practitioner of Kenton for thirty-eight years; died, October 12.

William Herman Buechner ⊕ Youngstown, Ohio; Western Reserve University, Cleveland, 1885; aged 56; a specialist in surgery; a member of the American College of Surgeons; died at a hospital in Youngstown, December 14, from pneumonia.

⊕ Indicates "Fellow" of the American Medical Association.

James C. Meredith, Manassas, Va.; College of Physicians and Surgeons, Baltimore, 1885; aged 72; died in the Eye, Ear, Nose and Throat Hospital, Washington, D. C., September 22, following an operation for mastoiditis.

Albert E. Woehnert ✠ Buffalo; University of Buffalo, 1893; aged 52; assistant professor of medicine in his alma mater; attending and consulting physician at the Erie County and Buffalo City hospitals; died, December 10.

Thomas Jasper Lamont, Treherne, Man.; Manitoba Medical College, Winnipeg, 1889; aged 62; was thrown from a vehicle drawn by a runaway team, October 5, and sustained injuries from which he died a short time later.

Charles Ernest Holgate ✠ Los Angeles; College of Physicians and Surgeons, Los Angeles, 1908; aged 44; captain, M. C., U. S. Army, and discharged, Jan. 7, 1919; was found dead in his office, December 15.

Charles Edward Hershman ✠ Alliance, Neb.; Chicago College of Medicine and Surgery, 1908; aged 35; was electrocuted, December 22, while treating a patient with roentgen rays.

Joseph Porter Merrill, Dozier, Ala.; Memphis Hospital Medical College, 1903; aged 46; a member of the Medical Association of the State of Alabama; died, November 28.

William Harris, New Castle, Wyo.; University of Pennsylvania, Philadelphia, 1870; aged 75; a member of the Wyoming State Medical Society; died about October 15.

Zenas Blish Sawyer, Cleveland; University of Wooster, Cleveland, 1875; aged 67; died, October 14, from injuries received when he was struck by a train at Willoughby.

John M. Radebaugh, Pasadena, Calif.; University of Pennsylvania, Philadelphia, 1873; aged 69; a member of the first board of health of Pasadena; died, December 15.

Joseph W. Hough, Jackson, Miss.; Eclectic Medical College, Cincinnati, 1850; aged 92; said to be the oldest practicing physician in Mississippi; died, December 11.

Honora Robbins Grimes, Bloomsburg, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1886; aged 61; died, December 13, from cerebral hemorrhage.

Alphonse F. Milot, Taunton, Mass.; Baltimore Medical College, 1893; aged 58; a member of the Massachusetts Medical Society; died, November 6, from pneumonia.

Edward Allen Heath, Winooski, Vt.; University of Vermont, Burlington, 1902; aged 46; a member of the Vermont State Medical Society; died, December 9.

William Henry Happel, Albany, N. Y.; Albany Medical College, 1890; a member of the Medical Society of the State of New York; died, December 10.

Emanuel Dreifus, New Orleans; Tulane University, New Orleans, 1876; aged 70; at one time coroner of New Orleans; died about December 13.

Charles Goodwin Merrell, San Francisco; Hahnemann Medical College of the Pacific, San Francisco, 1886; aged 65; died, December 12.

John L. Farmer, Savannah, Ga.; Louisville Medical College, 1888; aged 56; at one time mayor of Millen, Ga.; died about December 5.

William Charles Hall ✠ Pittsburgh and Bellevue, Pa.; University of Pennsylvania, Philadelphia, 1901; aged 51; died, December 2.

Henry Harrison Chamberlin, Canton, Ohio; Eclectic Medical College, Cincinnati, 1884; aged 61; died, December 4.

Ira L. Wyant, Norwalk, Ohio; Cleveland University of Medicine and Surgery, 1894; aged 50; died, October 26.

Rudolf Sicotte, Conklin, Mich.; University of Bishop College, Montreal, 1872; aged 67; died, December 7.

John Christian Hvoslef, Lanesboro, Minn.; Rush Medical College, 1876; aged 81; died, October 11.

Charles L. Plaine, Gadsden, Ala.; Meharry Medical College, Nashville, 1900; died, October 20.

Frank A. Dutton, Gainesville, N. Y.; University of Buffalo, N. Y., 1875; died, December 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

GLOVER'S CANCER SERUM

Scores of letters have reached—and are reaching—THE JOURNAL office similar in effect to the following:

"I am enclosing 'literature' received from the 'T. J. Glover Research Laboratory.' Though purporting to come from Toronto, where the $25.00 are to be sent, if you please, the envelope bears the New York postmark."

The above is from New Jersey while the two following are from Michigan and Illinois, respectively:

"Have you any information in regard to this party and his treatment for cancer? This is the first I have heard of any such work having been done. One wonders if it is presented in good faith or if the money god has overcome the gentleman's scientific spirit."

"Is this just one more of them? Why a roan horse? Some people might want serum from a nice bay or calico cow pony."

The literature referred to comes in an envelop bearing the name "T. J. Glover, Research Laboratory, Toronto, Canada," but mailed, apparently, from New York City. The enclosures are a single sheet circular signed Thomas Joseph Glover and entitled "Etiology of Cancer," a "Directions" slip and a card quoting prices. In the circular Dr. Glover states that he has prepared a serum from immunized horses, "between the ages of seven and nine years, of the roan type," and has injected this intramuscularly "into patients in the advanced stages of cancer and noticed that it has a specific action on every known type of cancer." Further:

"Up to the present time I have apparently cured cancer of the face, eye, nose, lip, mouth, tongue, stomach, bowel, bladder, breast and uterus."

In addition to the circular, was a small leaflet giving directions for the injection of the serum and also a card bearing Dr. Glover's name and Toronto address and reading:

> This is to advise you that DR. T. J. GLOVER'S Serum for the treatment of cancer can now be had by application to office at above address.
>
> PRICE FIVE DOLLARS PER TREATMENT. FIVE TREATMENTS MINIMUM NUMBER SENT AT ONE TIME.
>
> Send money by Post Office Money Order or Certified Cheque.
>
> DIRECTIONS FOR TREATMENT WITH EACH ORDER.

This advertising material, which is evidently being widely circulated in the United States, would indicate that the Glover Research Laboratory had received a permit from the United States Public Health Service licensing the interstate sale of this serum in the United States. No such license has been issued.

THE JOURNAL briefly reported in the department of Medical News, Oct. 30, 1920, that the Academy of Medicine of Toronto had appointed a committee to investigate the claims made for the Glover "cancer serum." In the meantime, the most charitable thing that can be said is that the "treatment" is in the experimental stage and the reported results have not been corroborated by independent investigators.

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the U. S. Department of Agriculture

Dermacilia Eye Remedy and Ointment.—The Dermacilia Mfg. Co., Hammond, Ind., shipped in October, 1917, a quantity of its "Eye Remedy" and "Ointment" which were misbranded. When analyzed by the Bureau of Chemistry the "Eye Remedy" was found to be a yellow watery solution perfumed with oil of rose and with indications of hydrastis con-

taining chiefly boric acid with traces of the sulphates of aluminum and zinc. False and fraudulent claims were made in the trade package to the effect that this remedy was an effective treatment and cure for sore eyes of all forms, ulcers on eyes, inflamed eyes, discharging eyes, that it would make weak eyes strong, restore eyelashes, remove floating spots, destroy all disease germs which come in contact with the eyes, etc.

"Dermacilia Ointment" was found by the Bureau of Chemistry to consist essentially of a petrolatum base with sulphur, boric acid and tannic acid. This was falsely and fraudulently represented to be effective as a cure for all skin and scalp affections, for all kinds of eczema, burns, scalds, itchings, dog bites, rusty nail punctures, dandruff, falling hair, sore nipples and to prevent lockjaw and blood poisoning. In May, 1920, the Dermacilia Mfg. Co. entered a plea of guilty and was fined $100 and costs.—[*Notice of Judgment No. 7762; issued Nov. 26, 1920.*]

Rogers' Liverwort, Tar and Canchalagua.—The Williams Mfg. Co., Cleveland, Ohio, shipped in March, 1919, a quantity of this product which was misbranded. The Bureau of Chemistry reported that analysis showed it to consist of a sweetened watery solution containing small amounts of plant extractives, tar extractives, salicylates, alcohol and glycerin. The stuff was falsely and fraudulently recommended as a treatment for consumption, asthma, whooping cough, influenza, etc. In January, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7771; issued Nov. 26, 1920.*]

Valesco.—In November, 1919, the Alhosan Chemical Co., St. Louis, Mo., shipped a quantity of "Valesco" which was misbranded. When analyzed by the Bureau of Chemistry this was found to be a solution of sodium hypophosphite, creosote and sugar in water. It was falsely and fraudulently recommended as a remedy for tuberculosis, asthma, pneumonia, etc. In March, 1920, no claimant having appeared for the property, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7768; issued Nov. 26, 1920.*]

Correspondence

"TREATMENT OF PYELITIS IN INFANCY AND CHILDHOOD"

To the Editor:—In the discussion on the article by Kretschmer and Helmholz (THE JOURNAL, Nov. 13, 1920, p. 1303), Dr. W. F. Braasch expressed his belief in the self-limited character of pyelitis as it manifests itself in early life. I have come to the same conclusion, and for these reasons: Pyelitis as a distinct disease of infants and children was not recognized, even by pediatricians, prior to twenty-five or thirty years ago, and not by physicians in general until a much later date; indeed, it is still frequently overlooked by many. Yet the disease must always, to a certain extent, have existed; it could not have originated de novo about thirty years ago. Hence, what became of the cases in the pre-recognition period? The obvious answer seems to be that many of them, the mild, at least, must have spontaneously recovered.

The absence of the lesions of pyelitis in infants and children dying of various ailments is a proof of this assumption, as is also the extreme rarity of the affection, in either its acute or its chronic form, during the period of adolescence. Routine examination of the urines of early life has convinced me that acute, uncomplicated pyelitis, terminating spontaneously, is not uncommon. Many of the febrile conditions of children, variously diagnosed in the past as gastric fever, indigestion, etc., must, without doubt, have been pyelitis.

It is not unusual to find pus (from 6 to 10 cells per high power field) in the uncentrifuged urine of children, whose only symptom is fever, and in whom disappearance of the pus and cessation of the fever occur without treatment especially directed to the urinary condition.

It is true that pyelitis is frequently a prolonged affection peculiarly resistant to treatment. Yet that many of these rebellious and long standing cases finally completely recover, apparently often in spite of treatment, and sometimes without it, I think is borne out by the arguments presented in this communication.

D. J. MILTON MILLER, M.D., Atlantic City, N. J.

"PROMOTIONS IN THE MEDICAL RESERVE CORPS"

To the Editor:—The communication of Dr. Mazyck P. Ravenel (THE JOURNAL, Dec. 4, 1920, p. 1584), on promotions in the Medical Reserve Corps, makes interesting reading and is apparently quite to the point. In connection with the same subject, I should like to suggest two reasons not mentioned in that communication why many medical officers refused to sign up with the Reserve Corps at the end of the "emergency." One reason was the failure to promote men, even after those men had received official notification from the Surgeon-General's Office that their recommendation for promotion had been sent to the Adjutant-General. The other reason was the retention of men in service long after there was any need or reason for so doing.

As regards promotions, men of efficiency served one and two years, conscientiously and in a most creditable manner, only to be discharged with the same rank, often undeservedly low, with which they entered the service. Recommendations for promotion were made and forwarded to the Washington office only to meet protracted delay, thus preventing other men, in turn, from receiving the recognition due them along the same line. But when a man received a letter from the Surgeon-General's Office officially stating that his recommendation for promotion had been forwarded to the Adjutant-General, and no promotion was forthcoming, the officer in the Medical Corps had sufficient reason to consider the omission as a breach of faith, or whatever the proper term may be, on the part of that office or the power that lay behind it. Better had the notification never been sent from the Surgeon-General's Office.

In regard to the second reason, that of retaining men in service long after they were needed, medical men and nurses outnumbered the patients in some of the Southern base hospitals before the desired discharge papers could be obtained. Medical men for the most part volunteered their services and made heavy sacrifices in order to do their duty, and their requests for discharge should have received prompt and favorable attention.

Some mistakes may have been unavoidable, owing to the new and sudden large amount of work to be performed at the Washington office. The mistakes in neglecting to deliver promotions and granting discharges were absolutely inexcusable. Promotions might have been granted as late as discharge time, and still have been gratefully welcomed. Promotions meant to the medical officers that their services had been creditably performed and were appreciated by the government. It was the only way in most cases that such appreciation could be expressed. It is always a satisfaction when one does his work well to have his efforts appreciated, no matter what the work is. Promotions granted at the termination of service would not have increased the pecuniary burden of the government.

The failure of the Surgeon-General's Office to "come across" with promotions, well-deserved, and especially when official notification of the forthcoming of the same had been received, and retaining officers in service long after

they were needed, were two important factors in influencing these men against signing up in the Medical Reserve Corps. It was the only method the men could use to register their disapproval of their treatment, and the errors of omission in these cases were believed to be easily avoidable.

Charles E. Hawkes, M.D., Providence, R. I.

MEMBERSHIP IN THE AMERICAN INSTITUTE OF HOMEOPATHY

To the Editor:—The enclosed letter was recently received from the American Institute of Homeopathy. I wish to ask whether the statements which I have marked "A", "B" and "C" represent the actual facts; in other words, does a fellow of the A. M. A. require the endorsement of any outside body in order to apply for reciprocity or examination by any state board or the Army and Navy?

Kindly do not use my name. ——, California.

[Comment.—The communication to which our California correspondent refers is reproduced below, and the statements to which he calls specific attention are the second, third and fourth paragraphs. Note that these are questions rather than statements. To the best of our knowledge and belief, however, the privileges referred to in these questions do not depend on membership in the A. I. H. any more than they do on Fellowship in the American Medical Association.—Ed.]

AMERICAN INSTITUTE OF HOMEOPATHY
ADMINISTRATIVE DEPARTMENT
829 Marshall Field Building
22 East Washington Street
Chicago, Ill.

Telephone Randolph 677
November 15, 1920.

My dear Doctor:—Once more we offer you the opportunity of being a member of the American Institute of Homeopathy. You have failed so far in accepting the opportunity of being of service to yourself and the profession of which you are a member.

Do you realize you cannot get into the Army, Navy, or Public Health Service unless you are a member of the A. I. H.?

Do you realize that many of our state boards will not allow you reciprocity unless you are a member in good standing and have the endorsement of the A. I. H.?

Do you realize that many of our state boards will not allow you even to take an examination without the endorsement of the A. I. H.?

Do you realize that you would not be getting alcohol for your dilutions were it not for the effort of the A. I. H.?

Do you know that our School has official recognition at Washington through the efforts of the A. I. H.?

Do you know that legislation is being entered in several states and ultimately all of them by the Federation of Labor for state health insurance, which will make you accept the fees offered by the insurance companies?

Wake up, Doctor, and get into the band-wagon. You should be willing to help.

Yours very truly,
T. A. McCann,
President.

SUGGESTION FOR TREATMENT IN RAYNAUD'S DISEASE

To the Editor:—A simple procedure to relieve the severe, paroxysmal, excruciating pain which occurs in many cases of Raynaud's disease has been of much service to me in the following case:

A woman, aged 39, in charge of the kitchen in a large hospital, whose duties necessitated her frequently entering an ice house, developed her first symptoms of Raynaud's disease three and a half years ago. According to her history, it was of moderate severity and lasted for a year with periods of acute exacerbations of pain. Then she was comparatively free from symptoms for one year, but had to be very careful of changes in temperature. When I saw her recently she had been suffering for six months, with constant dull ache in all the toes of both feet and the fingers of both hands, with the exception of the right ring and middle fingers.

The fingers and toes were very cyanotic, and the tips shriveled and black. Areas of necrosis had developed on several of the affected fingers, with bleb formation and slough. An attack of severe pain in the left index and middle fingers was the occasion of my seeing her.

I applied the broad elastic cuff attached to a mercurial manometer used in estimating blood pressure to her arm, inflated it until the radial pulse was obliterated, and then allowed the escape of the air in the cuff until the radial pulse could just be felt coming through the constriction. This procedure I repeated four or five times in four or five minutes. In this case it afforded instant relief from the severe pain, and the same method has been used a number of times since with the same result.

The fingers from a livid cyanosis became reddened and slightly swollen. I am aware that induced hyperemia has long been of service in this condition; but the foregoing procedure is simple and easily controlled, so that I have felt warranted in calling the attention of physicians to a ready means at their command.

Henry T. von Deesten, M.D., Hoboken, N. J.

THE FUNCTION OF THE PATHOLOGIST AS A CONSULTANT

To the Editor:—In the present age, despite the ever growing appreciation of the necessity for intelligent laboratory examinations in the scientific investigation and treatment of disease, there still remains, in the minds of some, the concept of the pathologist as purely the man in the laboratory more or less divorced from the clinical side; as one who, while perhaps well versed in the technic and minutiae of multifarious methods of investigation, has little or nothing to do with their interpretation or application to the case in hand. As a result of this it is the exception rather than the rule for the pathologist to be furnished with anything but the specimen; should he ask for more than this, there is at times a feeling that he is not "sticking to his last." He is too often felt to be concerned merely with tests and nothing else. All too often has this been the case in the hospital laboratory; too often has its director been chosen because of his mechanical efficiency in the performance of a multitude of various reactions.

The growth of this attitude has been gradual and of long standing; it has arisen partly, perhaps, as a result of the original attitude of pathology as concerned only with the effects of disease after they have been produced, with the study of the disease in the test tube and the cadaver, and with the atmosphere of the postmortem room rather than that of the bedside. It has been fostered, too, by the elaboration of "specific tests" and their exploitation by commercial laboratories where, for five dollars, one may obtain directions for collecting specimens, containers, "literature" concerning their applicability to diagnosis, and voluminous reports too often the work of technicians working like automatons for so much a month.

The present dearth of competent pathologists, the lack of sufficient material from which to develop them, and the demand for them in hospitals and schools have focused attention on the question in the endeavor to ascertain the reasons for this lack and to find the remedy. It is generally recognized that young men fail to center their endeavors on pathology as a field of activity largely because of the disproportion in the financial return as compared with the clinical side. The reason for this would seem to be closely concerned with the thoughts advanced in the early part of this communication. The first step toward the removal of this handicap would seem to be that pathologists must cease to be looked on as high grade technicians and regarded, rather, as specialists and remunerated as such. It is beginning to be realized that the remuneration in this field must be adequate, and various remedies have been proposed, most of which have to do with

increases in salary and, particularly, with the acquisition of private work. The financial value of a well organized laboratory to a hospital in attracting a paying clientele in search of an adequate and scientific investigation of their condition is a phase of the question concerning which little has been said—and yet it exists.

A good deal has been said concerning the obtaining of private examinations by the hospital pathologist for which a fee is charged—but undue emphasis has been laid on paying for the test alone. What has been lost sight of would seem to be the fact that the value of a completed examination lies, not in its performance, but in its meaning with regard to the individual patient—in a word, in its interpretation. It is not alone for writing the prescription that the physician is paid, not alone for knowing how to do his work, but for knowing what to do and what it signifies when it is done.

It should be recognized that the pathologist is—or should be—a well trained clinician and diagnostician equally well trained, in addition, in the performance and interpretation of laboratory investigations. He should be a consultant from the standpoint of what to do as well as how to do it. If, in a private case, he is called on to decide as to what laboratory investigations may be of diagnostic value; as to the advisability of using vaccines, for example; as to the indications for various methods of immunologic treatment, he should occupy the same position relative to the patient as the internist, the surgeon, the ophthalmologist or any other consultant, and he should be paid, not merely for what he does, but for his opinion. The pathologist who, after a study of the case, decides against the use of vaccines as useless or, perhaps, contraindicated, is more worthy of a fee and more honestly earns it than the one who prepares a vaccine anyhow. Yet, most often, it is the latter who is paid for the vaccine.

Only when the pathologist is looked on as an especially trained clinician in close relation with the clinical side of medicine; as a consultant whose opinion is sought as the interpreter of laboratory reactions, as is the diagnostician of signs and symptoms; and only when he is paid accordingly will the best ultimate results be obtained and the field again crowded with eager aspirants.

The profession frowns on contract practice as unworthy of its ideals in that it leads to slipshod work for the sake of a regular pittance, but regards with complacence the spectacle of the pathologist laboring to the best of his ability for an inadequate recompense set once and for all with but little or remote chance of advancing as the years go by. What group of specialists would rest content with a fixed income of so much—or so little—a year, or to be paid, for example, for the mere looking into the eye, or down the throat, or listening to the chest, rather than for evaluating the findings so obtained? What field of medical endeavor would flourish or prosper so constrained? And wherein is pathology a strange and different science?

ROBERT A. KILDUFFE, M.D., Pittsburgh.

"CASE OF PURPURA FULMINANS"

To the Editor:—The case of purpura fulminans reported by Dr. P. A. Lommen (THE JOURNAL, Dec. 2, 1920, p. 1569) conforms in its details to many of the cases of meningococcic infection studied in the cantonments during the recent mobilization of troops. In the vast amount of acute infectious disease studied among the recruits, cases showing tonsillitis, pains in the bones and joints, arthritis, vomiting, rapid pulse, low blood pressure, marked leukocytosis and a rapidly developing purpura were uniformly, in the experience of military surgeons, examples of meningococcus sepsis.

Purpura in measles, scarlet fever, pneumonia, influenza and other infectious diseases among the troops was extremely rare, and when it occurred was never the widespread, rapidly developing form described by Dr. Lommen and which to the practiced army surgeon meant just one type of infection. It is important to recognize the fact that many of these cases of meningococcus sepsis do not develop meningitis. It is also important to emphasize the brilliant results following massive intravenous serum therapy in just this type of case. The intravenous injection of 100 c.c. of antimeningococcus serum at intervals of six, eight or twelve hours is at times life saving, and in my opinion should be carried out in every case with the picture described by Dr. Lommen, even if positive bacteriologic evidence is not obtained.

W. W. HERRICK, M.D., New York.

"THE SPIRITUAL ADVANCEMENT OF THE PHYSICIAN"

To the Editor:—After reading the editorial comment on this subject in THE JOURNAL, December 11, one wonders what is really implied by such terms as "cultural advancement," "higher education in the humanities," "by-paths of artistic activity" and other manifestations and incidents of the "more civilized state." Perhaps it will be inspiring to some of your readers to recall, in this connection, Huxley's picture of a liberally educated man:

> That man, I think, has had a liberal education, who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold logic engine, with all its parts of equal strength, and in smooth working order; ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of nature and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself.

LAFAYETTE B. MENDEL, New Haven, Conn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

TREATMENT FOR HYMENOLEPIS NANA INFESTATION

To the Editor:—Please give me the approved treatment for infestation with *Hymenolepis nana*. I have a case in a young boy who has received two treatments with male fern, one treatment with pumpkin seed and one treatment with oil of chenopodium without results.

W. W. OLIVE, M.D., Durham, N. C.

ANSWER.—Male fern is recommended for this form of intestinal infestation. However, in view of the fact that *Hymenolepis nana* may be present in enormous numbers and that it may invade the villi of the intestine and bore deeply into the intestinal mucosa, repeated administration of aspidium is usually required to rid the patient of his unwelcome guests.

As our correspondent has not given the dose and method of administration, which are items important for success of this as well as of other tapeworm therapy, these might be briefly reviewed here:

1. The intestinal canal should be emptied as thoroughly as possible without weakening the patient. Restricted, chiefly liquid diet, for a day or two previously; and calomel, castor oil, and colonic flushing, the day before, constitute good preparatory treatment.

2. On the morning of the treatment, the patient should stay in bed. It lessens the tendency to emesis and is otherwise advisable, as the "cure" is necessarily a rather severe ordeal. He should receive no breakfast.

3. The fullest safe dose should be given. For the adult, this may be placed at 10 gm. of the oleoresin. Usually 6 or 8 gm. suffices. For children, the dose has not been as definitely determined. The dosage usually quoted—1 gm. for a child of 3 years, 2 gm. for one of 5 years—probably errs on the side

of conservatism. Even children of 1 to 1½ years have been given 1.5 gm. of the oleoresin without harm. If we apply Young's rule to the problem, to divide the age by the age plus 12, we should get:

For a child of 3 years, 3/15 of adult dose equals 2 gm.

For a child of 5 years, 5/17 of adult dose equals 3 gm.

These doses would probably be perfectly safe. The entire amount should be given at one dose, or in two or three portions at five to ten minute intervals. It has been suggested to mix the dose with honey or fruit preserve, to make it less disagreeable. If the patient is in bad physical condition or has considerable irritation in the digestive tract, repeated use of smaller and gradually increasing doses, accompanied by the building up of bodily resistance with nutritious foods, would be good policy. However, doses must not be repeated daily, or even after several days. It is best to wait a few weeks, when the continued passage of eggs would indicate the necessity for another attack.

4. While the simultaneous administration of anthelmintic and cathartic is unwise, as it would hasten the passage of the worm remedy through the alimentary tract and shorten the period of contact between the worm and the poison, the evacuant should be given as soon as it may reasonably be concluded that the worm has been sufficiently acted upon. Hence the administration of cathartic should be started one to two hours after the last dose of aspidium, and continued hourly until profuse evacuation has been secured. A saline, such as magnesium citrate solution, is probably the best agent for this purpose.

BASAL METABOLISM

To the Editor:—Please give references to the subject of basal metabolism, especially with regard to its clinical significance. Please omit my name.

A. J., Iowa.

ANSWER.—A list of references on the determination of basal metabolism appeared in THE JOURNAL, May 1, 1920, p. 1273. The following references also may be consulted:

Tompkins, E. H.: Sturgis, C. C., and Wearn, J. T.: The Effects of Epinephrin on the Basal Metabolism in Soldiers with "Irritable Heart," in Hyperthyroidism and in Normal Men, *Arch. Int. Med.* **24:** 269 (Sept.) 1919.

Means, J. H., and Aub, J. C.: The Basal Metabolism in Hypothyroidism, *Arch. Int. Med.* **24:** 404 (Oct.) 1919; The Basal Metabolism in Exophthalmic Goiter, ibid. **24:** 645 (Dec.) 1919.

Moulton, C. R.: Units of Reference for Basal Metabolism and Interrelations, *J. Biol. Chem.* **24:** 299 (March) 1916.

Gephart, F. C., and Du Bois, E. F.: Basal Metabolism of Normal Adults with Reference to Surface Area, *Arch. Int. Med.* **17:** 902 (June) 1916.

Aub, J. C.; Du Bois, E. F., and Soderstrom, G. F.: Basal Metabolism of Old Men, *Arch. Int. Med.* **19:** 823 (May) 1917; Basal Metabolism of Dwarfs and Legless Men, ibid. **19:** 840 (May) 1917.

Peabody, F. W.; Wentworth, J. A., and Barker, B. S.: Basal Metabolism and Minute Volume of Respiration of Patients with Cardiac Disease, *Arch. Int. Med.* **20:** 468 (Sept.) 1917.

Gardner, E. L., and Peppard, T. A.: Clinical Value of Estimation of Basal Metabolism, *Journal-Lancet* **39:** 495 (Sept. 15) 1919.

Reimann, S. P., and Hartman, F. L.: Effect of Anesthesia and Operation on Certain Metabolites, *Am. J. Physiol.* **50:** 82 (Oct.) 1919.

McCaskey, G. W.: Basal Metabolism Determination in General Internal Diagnosis: Clinical Application, with Illustrative Cases, THE JOURNAL, April 3, 1920, p. 927.

Snell, A. M.; Ford, Frances, and Rowntree, L. G.: Studies in Basal Metabolism, THE JOURNAL, Aug. 21, 1920, p. 515.

Jones, H. M.: Simple Device for Measuring Basal Metabolism: Preliminary Report, THE JOURNAL, Aug. 21, 1920, p. 538.

Boothby, W. M., and Sandiford, I.: Laboratory Manual of the Technic of Basal Metabolic Rate Determinations, Philadelphia, W. B. Saunders Company, $5.

STERILE MILK IN NONSPECIFIC THERAPY

To the Editor:—Please give references to articles on the use of sterile milk as a foreign protein in arthritis and allied conditions.

HERMAN SPITZ, M.D., Nashville, Tenn.

ANSWER.—Following is a list of articles on this subject:

Protein Poisoning—Anaphylaxis—Urticaria, THE JOURNAL, Jan. 31, 1914, p. 377; Feb. 7, 1914 p. 456.

Miller, J. L., and Lusk, F. B.: Treatment of Arthritis by the Intravenous Injection of Foreign Protein, THE JOURNAL, June 3, 1916, p. 1756.

Jobling, J. W., and Petersen, William: Nonspecific Factors in the Treatment of Disease, THE JOURNAL, June 3, 1916, p. 1753.

Scully, F. J.: Reaction after Intravenous Injections of Foreign Proteins, THE JOURNAL, July 7, 1917, p. 20.

Snyder, R. G.: Clinical Report of Nonspecific Protein Therapy in Treatment of Arthritis, *Arch. Int. Med.* **22:** 224 (Aug.) 1918.

Stracker, O.: Parenteral Injections of Milk in Latent Infections, *Med. Klin.* **16:** 388 (April 11) 1920.

Schulman, M.: Parenteral Protein Treatment of Arthritis; Milk Injections; Relation to Anaphylaxis, *Med. Rec.* **98:** 47 (July 10) 1920.

Darier, A.: Parenteral Injections of Cow's Milk, *New Orleans M. & S. J.* **73:** 16 (July) 1920.

Nolf, P.: Proteosotherapy by the Intravenous Method, THE JOURNAL, Nov. 22, 1919, p. 1579.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11. Sec., Dr. Samuel W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

CALIFORNIA: Los Angeles, Feb. 14-17. Sec., Dr. Charles B. Pinkham, 127 Butler Bldg., San Francisco.

COLORADO: Denver, Jan. 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 11-13. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. J. E. Strade, 1041 Alakea St., Honolulu.

INDIANA: Indianapolis, Jan. 11. Sec., Dr. W. T. Gott, Crawfordsville.

IOWA: Des Moines, Jan. 5-7. Dr. Guilford H. Sumner, Des Moines.

KANSAS: Topeka, Feb. 8. Sec., Dr. Henry A. Dykes, Lebanon.

MINNESOTA: Minneapolis, Jan. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.

MINNESOTA: National Board of Medical Examiners, St. Paul, Minneapolis and Rochester, Feb. 23-March 2. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

MISSOURI: St. Louis, Jan. 18-20. Sec., Dr. George H. Jones, Jefferson City.

NEW MEXICO: Santa Fe, Jan. 10-11. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: New York City, Albany, Syracuse and Buffalo, Jan. 24-27. Asst., Professional Examinations, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 4. Sec., Dr. George M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 11-12. Sec., J. M. Byrum, Shawnee.

OREGON: Portland, Jan. 4-6. Sec., Dr. Urling C. Coe, 1208 Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 11-15. Sec., Dr. Thomas E. Finnegan, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7. Sec., Byron U. Richards, Providence.

SOUTH DAKOTA: Pierre, Jan. 18. Director, Division of Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, Jan. 3-4. Acting Sec., Dr. C. L. Olsen, Salt Lake City.

VERMONT: Burlington, Feb. 8-10. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Spokane, Jan. 4-6. Sec., Dr. William M. O'Shea, Spokane.

WEST VIRGINIA: Charleston, Jan. 13. Sec., R. T. Davis, Charleston.

WISCONSIN: Madison, Jan. 11-13. Sec., Dr. John M. Dodd, Ashland.

CLINICAL CLERKSHIPS IN SURGERY

ROSCOE C. WEBB, A.B., M.D.

Instructor in Surgery, University of Minnesota Medical School

MINNEAPOLIS

The plan of instruction which has been developed at the University of Minnesota Medical School on the surgical service of Dr. A. C. Strachauer and associates, at the University Hospital, has proved satisfactory to the teaching staff and has been enthusiastically approved by the students in surgery. A brief outline of the plan may be of value to others.

Under the four quarter system, the first two thirds of the junior year are given over to didactic, laboratory and dispensary courses, giving an excellent preparation for the work in the hospital wards. The ward work, in the form of clinical clerkships, is provided during the last third of the junior year and the first third of the senior year, comprising in all two quarters. Of this time, six weeks is given over to the surgical clerkships. The class is divided into sections; from twelve to eighteen students at a time devote their forenoons to the surgical wards and operating rooms, and are also subject to call for emergency operations at all hours.

At the beginning of the surgical clerkship the students are given an informal talk by the instructor in which the work of the course is briefly outlined. Attention is called to the necessity of respecting the sensibilities of the patients, and also the use of tact in discussing before them malignant and other serious conditions. The student is made to feel at the outset that each case assigned to him is his case, and that he is responsible for any and all knowledge concerning the patient's condition at all times. "Rounds" are held in the wards on the nonoperating days from 11 a. m. till noon, at

which times opportunity is given all members of the section to examine patients to be operated on the next day, and other interesting cases are taken up. The case is presented to the group by the student in charge, and questions of diagnosis and differential diagnosis are discussed by the instructors. Attention is also given to the importance of anteoperative and postoperative treatment and of careful study of each case, in order to obtain the best results. In the operating room the history of the case is presented by the student to whom the case is assigned, following which there is a discussion by the surgeon. The student is responsible for any diagnostic or other data called for by the surgeon. Two students are on duty in the operating room on each operating day, one serving in the capacity of anesthetist and the other as an observer. This gives each surgical clerk two days' experience in anesthesia under the direction of the hospital anesthetist.

A surgical pathologic conference is held on Saturday of each week, conducted by the hospital pathologist and attended by the students and entire surgical staff. At this time there is a review of all pathologic tissue removed during the week. This feature has proved of particular interest and value to both students and staff.

One of the hospital wards is used as headquarters for information. There is a bulletin board in this ward on which are placed assignments of new cases, assignments for anesthesia, telephone numbers of students for call to emergency operations, and the subjoined general instructions:

GENERAL INSTRUCTIONS TO CLINICAL CLERKS IN SURGERY

1. *New Cases.*—New Cases, on admission, will be assigned to the clerks in order. Assignments will be made by the nurses in charge and will be posted on the bulletin board on the first floor. (Clerks will work in groups of two.) Consult the bulletin daily for new cases and proceed as soon as possible with any *new cases* assigned to you, as follows:

(*a*) Histories: These are to be taken according to the method given in the course in history taking, and recorded in notebooks. When completed, histories will be reviewed with the clerks and initialed by the instructors in charge if satisfactory. Unsatisfactory histories will have to be rewritten.

(*b*) Physical Examination: Each clerk is required to make a physical examination of each patient to whom he is assigned. Discretion must be used in the case of seriously ill or injured patients, and dressings or splints must not be disturbed. While examining any patient in the female ward, request the presence of a nurse during such examination. No pelvic examinations will be made except by direction of and in the presence of a member of the attending staff. Records of physical examination made by the clerks will be placed in the notebooks. Under separate heading at the end of the physical examination give a description of the *surgical condition*.

(*c*) Familiarize yourselves with the laboratory records and other diagnostic data.

(*d*) Follow the anteoperative, operative and postoperative treatment of each case assigned to you.

2. *Old Cases.*—(*a*) Visit each old case to which you are assigned, making such examinations as seem necessary, and note any progress in the case.

(*b*) Attend the surgical dressings on your patient whenever possible.

3. *Collateral Reading.*—It will be necessary for the students to supplement their work throughout the course with collateral reading on conditions occurring in patients to whom they are assigned.

4. *Case Summaries.*—Each clerk will keep a record of each case to which he is assigned, and at the end of the clerkship, notebooks will be handed in to the instructor. The case records are to include: (*a*) history; (*b*) physical examination; (*c*) laboratory and diagnostic findings; (*d*) anteoperative treatment; (*e*) operative treatment; (*f*) postoperative treatment; (*g*) result.

NOTE.—The student's grade for the course will be based on the character of the histories taken, physical examinations, recitations, summaries and attendance. Clerks are required to attend the operative clinics on Monday, Wednesday and Friday from 10:30 to 12, and to attend ward work on Tuesday, Thursday and Saturday from 9 to 12, on Monday and Wednesday from 9 to 10:30, and on Friday from 10 to 10:30.

The clinical material at the university hospital is drawn from all sections of the state, and presents the greatest variety of interesting problems, making ideal teaching material. At the end of the surgical clerkship the student has a complete record of from fourteen to twenty cases which are of obvious value in his later work as an intern, as the university seeks the most modern methods and the best attainable results in the treatment of patients. The majority of the students quickly adapt themselves to the ward work and gain the confidence of the patients. Their enthusiasm for surgical knowledge makes the clerkship course a source of pleasure and profit to instructors as well as students.

300 La Salle Building.

ADDITIONAL HOSPITALS APPROVED FOR INTERN TRAINING

The complete list, revised to Aug. 1, 1920, was published in the Educational Number of THE JOURNAL, Aug. 7, 1920. Supplementary lists appeared in the issues of Sept. 25 and Oct. 30, 1920. The following have been approved since Oct. 30, 1920:

St. Vincent's Infirmary, Little Rock, Ark.
St. Alphonsus Hospital, Boise, Idaho.
Grant Hospital, 551 Grant Place, Chicago, Ill.
Charles T. Miller Hospital, St. Paul, Minn.
St. Luke's Hospital, 5535 Delmar Blvd., St. Louis, Mo.
Holy Family Hospital, 151 Dean St., Brooklyn, N. Y.
Deaconess Hospital, 583 Riley St., Buffalo, N. Y.
City Hospital, Blackwell's Island, New York City, N. Y.
Rochester Homeopathic Hospital, 224 Alexander St., Rochester, N. Y.

New York Infirmary for Women and Children, 321 E. 15th St., New York City, has been transferred from Section III, "Special Hospitals," to Section I of the list, "General Hospitals."

Trinity Hospital, 200 Ninth St., Milwaukee, Wis., has been admitted to Section III of the list.

CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The next annual congress on medical education and licensure is to be held at the Congress Hotel, Chicago, March 7, 8 and 9, 1921. A joint program will be participated in by the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges and the Federation of State Medical Boards of the United States. Reports will be presented from fifteen committees on suggestive courses of graduate training in the various specialties; reports on the medical curriculum will be presented by several committees dealing with the clinical subjects of the medical course, and other papers will deal with the National Board of Medical Examiners and with problems of special interest to state licensing boards.

Pennsylvania July Examination

Dr. Thomas E. Finnigan, secretary, Pennsylvania State Board of Education and Licensure, reports the written and practical examination held at Philadelphia and Pittsburgh, July 6-8, 1920. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 233 candidates examined, 206 passed and 27 failed. Thirteen candidates were licensed by reciprocity. Fifteen candidates were licensed by endorsement of credentials. The following colleges were represented:

PASSED College	Year Grad.	Number Licensed
Denver Homeopathic College	(1903)	1
George Washington University Medical School	(1918)	1
Atlanta Medical College	(1915)	1
University of Georgia Medical Department	(1911)	1
Johns Hopkins Univ. Med. Dept.	(1917) 2, (1918) 3, (1919) 2	7
Univ. of Maryland School of Medicine	(1916) 3, (1919) 1	4
Harvard University	(1918) 1, (1919) 1	2
Tufts College Medical School	(1919)	1
University of Michigan Med. School	(1899) 1, (1919) 2	3
Long Island College Hospital	(1919)	1
Med. Dept. of the Univ. of the City of New York	(1889)	1
Univ. and Bellevue Hospital Med. College	(1915)	2
University of Buffalo Department of Medicine	(1917)	1
University of Cincinnati College of Medicine	(1919)	1
Hahnemann Medical College and Hospital of Philadelphia	(1916) 1, (1917) 1, (1919) 18	20
Jefferson Medical College of Pennsylvania	(1916) 6, (1917) 6, (1918) 1, (1919) 46	59
Medico-Chirurgical College of Philadelphia	(1916)	1
Temple Univ. Dept. of Med.	(1917) 2, (1918) 3, (1919) 9	154
Univ. of Pa.	(1916) 1, (1917) 7, (1918) 6, (1919) 39	53
Univ. of Pittsburgh School of Med.	(1918) 3, (1919) 24	27
Woman's Med. College of Pa.	(1917) 1, (1918) 2, (1919) 2	5

FAILED College	Year Grad.	Number Failed
University of Louisville Medical College	(1915) 1, (1911) 1	2
Tulane University of Louisiana	(1895)	1
College of Physicians and Surgeons, Baltimore	(1904)	1

University of Michigan Medical School	(1881)	1
University of Buffalo Department of Medicine	(1898)	1
Miami Medical College, Cincinnati	(1903)	1
Jefferson Medical College of Pennsylvania	(1919)	1
Temple University Department of Medicine	(1919)	10
Univ. of Pa. School of Medicine	(1917) 1, (1919) 1	2
Meharry Medical College	(1906)	1
University of West Tennessee	(1908)	1
National University, Athens	(1917)	2*
University of Kharkov	(1905)	1*
University of Central Spain, Madrid	(1916)	2*

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine	(1905)	2	Illinois
Baltimore Medical College	(1911)		Maryland
Johns Hopkins Univ. Dept.	(1910), (1916)	2	Maryland
St. Louis University School of Medicine	(1912)		Missouri
Hahnemann Medical College of Pennsylvania	(1897)		Maryland
Jefferson Med. College of Pennsylvania	(1906) (1916)	2	New Jersey
University of Pennsylvania School of Medicine	(1895)		Delaware
Woman's Medical College	(1908)		Colorado
University of Vermont College of Medicine	(1912)		Maine

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Georgetown University	(1918)		Nat'l Bd.
Johns Hopkins University Med. Dept.	(1917)		Nat'l Bd.
Harvard University	(1916)		Nat'l Bd.
Jefferson Medical College of Pennsylvania	(1919)		Nat'l Bd.
Univ. of Pa. School of Medicine	(1918) 4, (1919)	6	Nat'l Bd.
Woman's Medical College	(1918)		Nat'l Bd.

* Graduation not verified.

Washington July Examination

Dr. William M. O'Shea, secretary, Washington State Board of Medical Examiners, reports the written examination held at Seattle, July 6-8, 1920. The examination covered 13 subjects and included 130 questions. An average of 75 per cent. was required to pass. Of the 17 candidates examined, 13 passed and 4 failed. Fifty-four candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles		(1917)	85.5
University of Colorado		(1917)	84.4
Northwestern University Medical School		(1919)	85.4, 89.4
Rush Medical College		(1917)	89.7
University of Louisville		(1913)	86.3
Kansas City University of Physicians and Surgeons		(1919)	85.7
Columbia University		(1919)	75.4, 90.7
University of Virginia		(1914)	90.3
McGill University		(1916)	82.5, (1918) 85.3
Kumamota Special Medical School		(1917)*	79.3
	FAILED		
Hahnemann Medical College, Chicago		(1903)**	75.6
Loyola University		(1918)	61.6
Willamette University		(1912)**	80.7, (1913)** 79.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Leland Stanford Junior University School of Med.		(1914)	California
Georgetown University School of Medicine		(1904)	Idaho
Coll. of Phys. and Surg., Chicago		(1898)	Indiana, (1905) Illinois
Hahnemann Medical College, Chicago		(1894)	Idaho
Hering Medical College		(1904)	Iowa
Northwestern Univ. Med. School		(1909), (1915, 2), (1917)	Illinois
Rush Medical College		(1894) (1902)	California Minnesota, (1917) Illinois.
University of Illinois		(1915)	Missouri, (1919) Illinois
College of Physicians and Surgeons, Keokuk		(1882)	Michigan
State University of Iowa College of Homeo. Med.		(1910)	Iowa
State University of Iowa College of Medicine		(1907) (1880), (1889), (1908), (1914), (1917), (1919)	Idaho Iowa.
Louisville and Hospital Medical College		(1908)	Kentucky, Montana
University of Louisville Medical Department		(1919)	Kentucky
Johns Hopkins University		(1914)	Penna.
Washington University School of Med., Baltimore		(1874)	Minnesota
University of Michigan Medical School		(1907)	Indiana
Hamline University		(1904)	N. Dakota
University of Minnesota Medical School		(1903), (1907)	Minnesota
Barnes Medical College		(1908)	Nebraska
Marion-Sims-Beaumont Medical College		(1902)	Idaho
Missouri Medical College		(1891)	Missouri, (1894) Montana
National Univ. of Arts and Sciences Medical Dept.		(1917)	Missouri
St. Louis College of Physicians and Surgeons		(1906)	Idaho
St. Louis University School of Medicine		(1904) (1907)	S. Dakota Illinois.
Omaha Medical College		(1891)	Nebraska
Cincinnati College of Medicine and Surgery		(1875)	Michigan
Columbus Medical College		(1892)	Kansas
Eclectic Medical Institute		(1891)	Penna.
University of Wooster		(1881)	Montana
Western Reserve University School of Medicine		(1917)	Ohio
Jefferson Medical College of Philadelphia		(1902) (1904)	Idaho North Dakota.
University of Pennsylvania School of Medicine		(1913)	Indiana
Meharry Medical College		(1917)	Tennessee
Manitoba Medical College		(1915)	N. Dakota
McGill University		(1907)	Alaska
University of Christiania		(1893)	N. Dakota

* Graduation not verified.
** Fell below 60 per cent. in one or more subjects.

Social Medicine and Medical Economics

A NIGHT CLINIC DEVOTED TO SKIN DISEASES AND SYPHILIS

Some Observations, with Particular Reference to Syphilis *

EDWARD A. OLIVER, M.D.
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CHICAGO

In October, 1916, an evening industrial medical and surgical clinic was opened at Rush Medical College, in the Central Free Dispensary. The object of this clinic was to care for those men and women in need of medical attention, but unable to absent themselves from work, and financially unable to consult private physicians. A department of syphilis was included in this clinic, in addition to departments of medicine, surgery, genito-urinary diseases, gynecology, and eye, ear, nose and throat. The department of syphilis has been actively engaged in the treatment of this disease for the last four years. It is my purpose to report in a general way our aims and accomplishments during the last year—Oct. 1, 1919, to Oct. 1, 1920.

The clinic is open two evenings each week, Tuesday and Friday, from 7 to 9 o'clock. All the work has been done under the supervision of Dr. Oliver S. Ormsby, and in charge of myself and two associates, Dr. N. C. Stam and Dr. Elbert Clark, assisted by two or four senior medical students. These students register for a quarter, or three months' work, and credit is given them by the department of dermatology. In this three months' period an attempt is made to teach the students some of the fundamentals of the diagnosis of syphilis, the preparation of arsphenamin solutions, the technic of intravenous and intramuscular injections of arsphenamin and mercury, respectively, and in a general way, the symptoms and treatment of syphilis. Close cooperation is maintained with our medical department. A careful medical examination, including urine analysis, is made of all cases before treatment is inaugurated, and all old cases are examined periodically. A competent dentist examines every patient's mouth, and corrects any defects found. During the last year there have been 5,412 visits to the clinic; a total of 154 patients have been treated; 1,218 injections of arsphenamin and 3,509 injections of mercury have been given. There have been 685 visits for purposes of consultation and having Wassermann tests taken. The average number of patients present each evening has been fifty. Twenty-two cases of primary syphilis have been treated, forty-two in the acute secondary stage, and ninety in the later stages. Of the latter, nine were cases of nervous syphilis, the others being old cases varying in duration from two to twenty-five years.

The majority of these patients have come direct to us, lacking funds to consult private physicians; others have been referred from the other departments. No case is treated until, by careful clinical and laboratory tests, a diagnosis of syphilis has been made. A competent serologist does the laboratory work for the day and night clinic. Through our social service department, careful inquiry is made concerning each patient's financial condition, and if it is found that a patient is able to pay for medical treatment, he is denied admission. This rule is rigidly enforced. An earnest effort is always made to have the families of married patients brought to the day clinic for examination and, where necessary, treatment. All cases are reported to the board of health, and a careful follow-up system is kept. Despite our best efforts, some patients tire of treatment and drop out; the majority, however, have been conscientious and obedient.

* From the Department of Dermatology, Rush Medical College.

PLAN OF TREATMENT

The plan of treatment, followed as closely as practicable in all cases, is that suggested by Dr. Ormsby.[1] Unless there is some definite contraindication, the treatment of all cases consists of giving three intravenous injections of arsphenamin on three successive clinic nights, an interval of three days elapsing between injections. In order to guard against any idiosyncrasy the patient may have to arsenic, the first injection is always given in a dosage of 0.2 gm.; the second and subsequent injections are either 0.4, 0.5 or 0.6 gm., depending on the body weight. These injections are followed by six intramuscular injections of mercury, administered twice weekly. After this three weeks' interval of mercurial medication, three more injections of arsphenamin are given, with a dosage from 0.4 to 0.6 gm. Then follows a six weeks' period of mercurial injections. This program constitutes one course of treatment, after which the patient is allowed to rest from four to six weeks. He reports at the end of that time, he is carefully looked over, and a Wassermann examination is made.

We have used the arsenobenzol (Dermatological Research Laboratories) brand of arsphenamin exclusively the last year, and for mercury have employed soluble mercuric chlorid, 1 per cent. in physiologic sodium chlorid solution, in a dosage of from 30 to 35 minims, twice weekly. Arsphenamin has been administered by the gravity method, using a small glass funnel, with a capacity of 100 c.c., with rubber tubing attachment, that can be held in one hand while the needle is being inserted. The needle gage has been 20. Freshly distilled, reboiled water is used in dissolving the arsphenamin, 20 c.c. of water to 0.1 gm. of drug. We have aimed to consume at least five minutes in administering the dose.

Out of 1,218 injections of arsphenamin, we have had only one slight vascular reaction on the table, and this occurred in a patient who had eaten a heavy meal shortly before taking the injection. One case of jaundice developed in a patient after five injections, and one case of nephritis after twelve injections. Both of these patients recovered quickly. We have had no cases of exfoliating dermatitis, or complaints of diarrhea, nausea or vomiting. This seems in a way remarkable because, although definite instructions are given to each patient to refrain from eating for at least three hours before and after arsphenamin injections, in a dispensary class of patients such instructions are difficult to enforce.

RESULTS

While it is decidedly unpractical to draw any definite conclusions from one year's treatment of syphilis in dispensary practice—in the present state of our knowledge of the disease there is no absolute criterion of a cure—certain features come to light that may help us in our future endeavors:

Primary Syphilis.—It has been our experience that in cases in which we have begun the course early, when the inital lesion was only of a few days' duration, the Wassermann reaction has been negative six weeks after the completion of one course. It remained negative in some cases for from three to four months, when no further treatment was given, but invariably became positive at that time, thus emphasizing the fact that even in early cases intensive therapy is indicated. In other words, even when treatment is instituted early, two, or better three, such courses should be given the first year. The chancre with its attendant symptoms, except the regional adenopathy, disappears after two injections of arsphenamin.

Secondary Syphilis.—With this system the most dangerously infectious cases have been rendered noncontagious in ten days' time; mucous patches, condylomas, roseola and all concomitant symptoms disappear after the first three injections of arsphenamin.

1. Ormsby, O. S.: A Valuable Method of Employing Arsphenamin in Syphilis, J. A. M. A. 75:1 (July 3) 1920.

While in a few of our acute secondary cases the patients have given negative blood Wassermann reactions after one full course of treatment, and have improved markedly in general health, if no further treatment is instituted they generally relapse. Therefore we have felt that these patients ought to have at least three or four such courses before being discharged.

Tertiary Cases.—In this type of case it is always hard to know how much the patient is improving. The longer the duration of the disease, the harder it is to make an impression on the Wassermann reaction. Symptoms clear up and an improvement is noted in the general condition of the patient, but whether or not we are curing the disease, only time will tell.

We are handicapped in a night clinic, handling patients who must do a day's work and who are unable to take the time off for spinal fluid examination and intraspinal treatment. We have treated our nervous cases by intravenous and intramuscular injections only, and have noted marked improvement in every instance.

Four years ago this work was instituted in an experimental way. Our hopes for its success have been more than realized. The clinic has attracted a large number of patients, and we have had no difficulty in holding most of them. It has been of undoubted benefit to this class of patients, as well as to the general public, in rendering noninfectious a number of dangerous cases.

The course has been a popular one with students, in that they come in direct contact with the patient, treating him as they would in private practice, and watching his progress from week to week. It affords them a working knowledge of the disease and its treatment that no other course can equal.

25 East Washington Street.

Miscellany

THE RAT IN ITS RELATION TO MAN AND HUMAN DISEASES

That the rat is a natural enemy of mankind seems beyond doubt. Besides the material loss from its depredation, which in this country alone is estimated to amount to from $35,000,000 to $50,000,000 annually, it is the principal agent in the spread and propagation of certain diseases, of which plague is the most important. A brief restatement of some facts bearing on this subject may be without interest.

In 1871, Rocher noticed that the first sign of an epidemic of plague was an epizootic of high mortality among rats. This was soon confirmed by Thompson in Sydney and Hunter in Hong-Kong. Bell cited the case of a Chinese who contracted bubonic plague following the bite of a rat. In consequence of this association the possible modes of the transmission of the disease have been considered with much care. Of all the theories set forth, the flea theory seems most attractive. Ogata first suggested that the fleas on plague-infected rats may play an important part in the dissemination of the disease, and Gauthier, Raybaud, Elkington and Liston were successful in conveying the disease by fleas from infected to healthy rats. Nuttall, however, was unable to prove that such transmission is possible. However, the India Plague Commission (*J. Hyg., Suppl.* 3, 1914) established as facts which are accepted generally that plague is transported by rodents and transmitted by fleas; that there is a seasonal increase in fleas followed by an increase in rodent plague, and that the seasonal increase in fleas is due to the fact that fleas are unable to maintain their vitality at a temperature above 85 F.

Inada and his associates (*J. Exper. Med.* **24**:471 [Nov.] 1916) detected spirochetes in the liver of a guinea-pig bitten by a rat, and also in the urine and kidneys of rats in 32.4 per

cent. of the total number examined, and they consider this spirochete as the causative agent of infectious jaundice, naming it *Spirochaeta icterohaemorrhagiae*. Jobling and Eggstein (The Journal, Nov. 24, 1917) studied the wild rats in Nashville with the result that 10 per cent. of more than a hundred rats were found to harbor this organism. Stokes (*Lancet*, **1**:142 [Jan. 27] 1917), investigating infectious jaundice in the British armies in Flanders, found *Spirochaeta icterohaemorrhagiae* in the kidneys of field rats, and infected guinea-pigs with the organism. Otteraaen (*J. Infect. Dis.* **24**:485 [May] 1918) demonstrated the organism in the mouth of rats in Chicago, and he concluded that it is possible for rats to transmit the disease to men simply by biting. It has been pointed out that butchers, sewermen, and men in trenches are liable to contract the disease on account of their occasional association with rats.

The subject of rat-bite fever has been considered in these columns before, and occasional new cases are being reported. Thus, Tunnicliff and Mayer (*J. Infect. Dis.* **23**:555 [Dec.] 1918) reported a case in a negro girl who developed the disease following the bite of a rat, but the streptothrix isolated from this case appeared to be different from typical *Streptothrix muris-ratti;* culturally, it grew profusely and produced a grayish-yellow on dextrose blood agar and, morphologically, it did not form long and wavy filaments. For these reasons they considered it to be rather like the weasel streptothrix—*Streptothrix putorii*—found in a person who developed a disease like rat-bite fever after being bitten by a weasel.

In 1903, Stefansky (*Centralbl. f. Bakteriol.* **33**:481, 1903) recognized what he called leprosy in rats in Odessa, and the same condition was soon reported by Wherry in India and Wherry and McCoy in this country (*J. Hyg.* **7**:337; The Journal, Aug. 22, 1908, p. 690). The relation between rat leprosy and human leprosy has been established in a way by the complement fixation test, human leper serum and antigen prepared from rat leprosy fixing complement.

The permanent reservoir of trichinosis infection must be some animal with cannibalistic tendencies. As rats are cannibalistic and trichinosis is common among them, they may be a natural reservoir for the parasite.

The assertion by Richardson (*Boston M. & S. J.* **175**:397 [Sept 21] 1916) that rats may be the active agent in the transmission of the virus of epidemic poliomyelitis has not been substantiated either by epidemic or by experimental observations. Lynch (The Journal, Dec 25, 1915, p. 2232) has reported a case of amebic dysentery in a rat and suggested that rats may be the disseminators of amebas pathogenic for man.

To counterbalance this multifarious rôle in the spread of disease, the rat, so far as we know, has no particular value to human beings in nature. One point in its favor is that it serves in the laboratory in the research of cancer; and since the rat is susceptible to leprosy, it may be of value in the study of leprosy also; but the numbers necessary for such purpose are of course, easily obtainable. It is obvious that proper methods for the eradication of the rat should be instituted everywhere without delay and should be vigorously conducted. However, the measures with which we are familiar are rather unsatisfactory. The animal is so intelligent that traps cannot be repeatedly applied. Fumigation by the ordinary process of burning sulphur has the risk of fire and the bleaching effect on goods subjected to the process. The Clayton method also has the disadvantage of causing serious damage to various goods. Among the many kinds of poisons used, the Danysz bacilli seem to be superior, but they have no effect on fleas, and the fleas from the dead rat may be disseminators of plague, as Raybaud points out, the fleas seeking a new host as soon as the body of a dead rat becomes cold. Rat killing at so much a head proves to be inadequate because of the rapid reproduction of the animal. Noir shows that if a hunter could kill from 2,000 to 3,000 rats a day, it would take about eight years to accomplish the total extermination of the estimated rat 8,000,000 population in Paris, without considering at all their reproductive increase in the meantime. A pair of rats can produce forty young rats within a year; hence he estimates that there would be 160,000,000 young rats to offset the loss in killed. Rat proofing is expensive and perhaps not universally feasible, but we must accept the fact that an effective antirat campaign will cost a great deal of money and energy. As pointed out by others, merely to put out traps and poisons without preliminary rat proofing can be productive of little good and no permanence. Rat proofing is of the greatest value as an antirat measure, and the practical results to be expected from it are much greater than those from any other method now available.

Book Notices

The Yeasts. By Alexandre Guilliermond, D.Sc., Professor of Botany, University of Lyons. Translated and Thoroughly Revised in Collaboration with the Original Author by Fred Wilbur Tanner, M.S., Ph.D., Assistant Professor in Bacteriology, University of Illinois. Cloth. Price, $6. Pp. 424, with illustrations. New York: John Wiley and Sons, Inc., 1920.

This is a translation of the French edition published in 1912, but has been brought up to date by the translator in collaboration with the author. The book is divided into two parts of about equal length. Part I contains chapters on the morphology, cytology and physiology of yeasts, together with methods in use for cultural work and for identification and classification. Guilliermond proposes a classification differing in many respects from the older one of Hansen. Five groups of the true yeasts (*Saccharomyces*) are recognized. The first includes those that multiply by cell partition; the second contains species that have retained traces of sexuality; the third includes most of the fermenting varieties; the fourth comprises those that do not ferment, according to the ordinary use of the term, but do produce ethers, and the fifth is a heterogeneous group. Part II consists of detailed descriptions of the known species of yeasts, both those recognized as true yeasts and *Torulae* and *Mycoderma*. The volume will be particularly useful to students of microbiology, as it contains in concentrated form all of the material of interest to them. The method of presentation involves some repetition, but this is not a serious fault. It is certainly of great value to have at hand a summary of a subject, the contributions to which are so many and so scattered through the literature.

History and Bibliography of Anatomic Illustration in Its Relation to Anatomic Scienie and the Graphic Arts. By Ludwig Choulant. Translated and Edited with Notes and a Biography by Mortimer Frank, B.S., M.D., Secretary, the Society of Medical History, Chicago. With a Biographical Sketch of the Translator and Two Additional Sections by Fielding H. Garrison, M.D., and Edward C. Streeter, M.D. Cloth. Price, $10 net. Pp. 435, with illustrations. Chicago: University of Chicago Press, 1920.

In 1916, Dr. Mortimer Frank undertook the translation of Choulant's History of Anatomic Illustration. To Dr. Frank, the history of medicine was more than an avocation. He contributed notably to many phases of the subject. No better tribute to his memory could have been arranged than for his friends to aid in the publication of his translation of Choulant. This book, published in Leipzig in 1852, is one of the classics of medical literature and, since the date of its publication, the authoritative work on this subject. Dr. Frank added to the book an exhaustive account of researches made by Sudhoff and others on medieval manuscripts. He included a bibliography almost up to the date of publication, supplemental notes prepared by Choulant, published in a German periodical in 1857, a biography and portrait of Choulant, and some new illustrations. This book may be said, therefore, to represent the last word on the subject. Since books of this kind are very special in character, his work should continue to serve as an authoritative one for at least another generation.

Dr. Fielding Garrison contributes to the work a brief biography of Dr. Frank, whose untimely death in 1919 prevented his seeing the completed copy of the work; an article on anatomic illustration since the time of Choulant; and, with

Dr. Streeter, an article on sculpture and painting as modes of anatomic illustration.

The close relationship that has existed for many years between the professions of art and medicine is well known to physicians. The well known work of Leonardo Da Vinci, who contributed more than 750 anatomic drawings to the literature of his period, is most conspicuous. In this book are mentioned the names of almost a thousand physicians, sculptors and painters who contributed to the art of anatomy and thus to its science.

The only faults noticeable are, first, the arrangement, which appears to be unsystematic and which does not permit differentiation of the portions of the book prepared by various contributors; and, second, the placing of all of the legends for the 350 illustrations on ten pages just preceding the index. Many of the legends are between twenty and thirty lines in length, and it is inconvenient to look at the picture and then turn several hundred pages to read a legend of such length. It is especially trying to bear in mind the minute details of a picture to which the legend calls attention.

By publishing the Choulant-Frank text, the University of Chicago Press has performed a service to medical science. Books of this kind are not "best sellers"—their sale is limited—yet no effort has apparently been spared to present a beautiful and artistic example of typography.

HANDBOOK OF DISEASES OF THE NOSE, THROAT AND EAR FOR STUDENTS AND PRACTITIONERS. By W. S. Syme, M.D., F.R.F.P., & S.G., F.R.S.E., Surgeon to the Ear, Nose and Throat Hospital, Glasgow. Cloth. Price, $2.75. Pp. 329, with illustrations. New York: William Wood & Co., 1920.

This book is all that the full title implies. It is short, concise, and remarkably complete for a work of its size. The author has abandoned the usual textbook construction of more pretentious volumes, and has adopted a simple, readable, paragraph style, one paragraph, as a rule, to each subject. It follows, of course, that the subjects are briefly handled, yet it is a valuable book unquestionably to the busy practitioner and offers him a fairly complete view of the special field in epitome. For the use of the serious medical student it is possibly too brief an exposition to be depended on entirely. There are few illustrations, and of these a number might well be omitted without detracting from the merits of the book.

OPERATIVE GYNECOLOGY. By Harry Sturgeon Crossen, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School. Second edition. Cloth. Price, $10. Pp. 717, with 834 illustrations. St. Louis: C. V. Mosby Company, 1920.

The second edition of this valuable work brings up to date the operative work in the field of gynecology. There are 864 excellent illustrations of the various operations, and with the clear, concise text, the technic of the various operative procedures is readily followed. The chapters on prolapse of the uterus and bladder and on carcinoma of the uterus are complete, and cover those subjects in an excellent manner. The preparation of the patient, care during operation, and postoperative treatment are given full consideration. The book not only lays great stress on the various operative procedures, but also carefully considers all things that go to make the operations successful. It can be recommended as a good reference and guide in operative work in gynecology.

THE THEORY AND PRACTICE OF SANITATION IN COUNTRY PLACES INCLUDING THE BACTERIOLYTIC TANK SYSTEM. By W. Ramsay Smith, M.D., D.Sc., F.R.S. Fifth Edition. Paper. Pp. 36, with illustrations. Adelaide: R. E. E. Rogers, 1920.

This readable little pamphlet has evidently been of considerable service, since it is now in its fifth edition. It contains a good, common sense discussion of rural methods of sewage disposal. The descriptions are clear, and the book contains a number of simple plans drawn to scale. One of the cardinal points in rural plumbing, namely, the great importance of separating the grease and sink waste from the contents of water closets, needs more emphasis than it receives. The mixture of grease with fecal matter is one of the main reasons for the frequent failure of rural systems of sewage disposal to work properly.

Medicolegal

Method of Treating Compound Comminuted Fracture—Evidence—As to Nurses

(Browning v. Hoffman et al. (W. Va.), 103 S. E. R. 484)

The Supreme Court of Appeals of West Virginia says that the plaintiff, a boy about 9 years old, suffered a compound comminuted fracture of the right leg, 2 or 3 inches above the ankle, and that this action was brought to recover damages for alleged negligence in the treatment of the injury in a private hospital conducted by the defendants as partners in business, one of whom, Dr. Hoffman, dressed the wound, with the assistance of the family physician, on Monday evening. Dr. Hoffman first thought that there should be an amputation, but, lacking the consent of the parents, decided to try to save the leg. After thorough cleansing and disinfection, taking out a loose sliver of bone, setting and wiring the bones, and closing the incision with sutures, the leg was put into a plaster cast, with cotton and gauze, and an opening or window left for drainage, inspection and treatment. Dr. Hoffman saw the boy on Tuesday morning and perhaps evening, and was then away until about 2 a. m. Thursday, in response to a call by the chairman of the Executive Committee of National Defense. Tuesday night the boy became delirious, and had a high temperature and a weak pulse. On the discovery of the unfavorable change, the head nurse, in addition to alteration of the treatment, endeavored to notify a young physician connected with the hospital, whose competence was not impeached, but she was unable to reach him before 10:30 a. m., when he visited the boy's room. The treatment adopted by the nurse was then continued, possibly with slight modification. The physician then tried to get into communication with members of the family, and made preparations to operate, but did not do so for want of consent. The father, a railroad man, was away until about 9 p. m., and was then unwilling to let the young physician operate, but was willing to let the family physician do it, while a rule of the hospital forbade operations there by surgeons not connected with it. The result was that the boy was removed to Cumberland, Md., where his leg was taken off at the hip and his life barely saved. The result of the trial was a verdict for $5,500 in favor of the plaintiff, from which $500 was remitted; and, besides, a new trial was granted.

The court holds that, if a surgeon adopts, in the treatment of a case, a method established and approved by physicians and surgeons, generally, in the community in which he performs the operation or gives the treatment, at the time thereof, and is not negligent or careless in its application, he is not liable for injuries caused by such treatment. If there are two or more approved methods of treatment of an injury of the kind committed to his care, he may adopt the one which, in his honest opinion, will be the more efficacious and appropriate under all of the circumstances, and, in such case, he is not liable for an injury resulting from an error in his judgment, if there be one. He is not bound at his peril to adopt the best method. The propriety of the use of a plaster-of-Paris cast in the treatment of a compound comminuted fracture of the leg having been established by uncontradicted evidence, in a case in which a surgeon is charged with malpractice in the treatment of the wound, it is error to give an instruction based on the hypothesis of negligence in the mere adoption and use of that method, even though an injury has followed, which might have resulted from use thereof in an improper manner. It is also error, in an action for malpractice by a physician or surgeon, to admit evidence of a method of treatment, antedating the treatment involved by a long period of time, and differing materially from the method adopted in the treatment and generally approved and used at the time thereof.

If, in the trial of such a case, incompetence of the nurses is relied on, and no evidence has been adduced for the purpose of proving it, except lack of graduation of the day and night nurses, the head nurse being a graduate, and there is no evidence of any omission of, or departure from, the

instructions given them, or of any action or conduct on their part resulting in or causing the alleged injury, it is error to give an instruction founded on the assumption of evidence of their incompetence and negligence, or either of them. There was no evidence in this case of negligence on the part of any of the nurses. Not being physicians in charge of the patient, they had no authority to depart from the instructions given them by their employers. There was no proof that they did not obey their instructions or perform the duties assigned them, or that they were not properly instructed. Their failure to give correct information to members of the family, if any, or to remain at all times in the sick room, was not evidence of negligence contributing to or occasioning the result complained of.

Physicians Not Insurers—Requirements—Evidence

(Harju v. Allen (Minn.), 177 N. W. R. 1015)

The Supreme Court of Minnesota, in affirming an order granting a new trial after a verdict was rendered in favor of the plaintiff, says that the evidence was practically conclusive that he had suffered a fracture of some one or more of the pelvic bones, and that as a result the head of the right femur was driven in. The defendant failed to diagnose the injury correctly. The plaintiff's evidence was that, on occasions, the defendant told him that there was nothing the matter with him, that he was shamming, and told him that he should walk three hours every day; and, save for the application of liniment, gave him very little treatment. The defendant, on the other hand, contended that there was no evidence of negligence in diagnosis or treatment, and that a verdict should have been directed for him. With this, however, the court does not agree. A physician does not insure either correct diagnosis or correct treatment, but he is required to possess the skill and learning which is possessed by the average member of his school of medical profession in good standing in his locality, and to apply that skill and learning with ordinary and reasonable care. If he does this, he is not ordinarily liable for damages consequent on an honest mistake or an error of judgment in making a diagnosis or in prescribing treatment, where there is reasonable doubt as to the nature of the physical condition involved, or as to what should have been done in accordance with recognized authority and good current practice. But he cannot shield himself from liability by merely saying that, though he erred, he used his best judgment. Such a rule would dispense with both skill and care. He must exercise reasonable skill and care, and the question whether he has done so is usually a question of fact.

Nor does the court agree with the defendant's contention that a jury could not find negligence in either diagnosis or treatment without expert testimony charging the defendant with negligence. There are some facts pertinent to a case in malpractice which may be proved only by the testimony of experts. For example, a nonprofessional observer may not ordinarily diagnose disease; the standards of practice in different schools of medicine must be established by the testimony of experts of those schools; and generally with respect to matters of science or specialized art, or with respect to matters resting on pure theory, judgment and opinion based on reasons familiar only to experts, the opinion of experts is generally the only evidence receivable. But it is not the law that a physician can never be found guilty of malpractice except on opinion evidence of negligence furnished by other practitioners. It is not difficult to hold that there was evidence of malpractice in this case. If malpractice depended on the failure of the defendant to diagnose accurately the precise nature of the fracture which the plaintiff suffered, it would be difficult to say that such failure evidenced either proper skill or care, for the experts differed in their testimony as to just what was the nature of the fracture. But the experts on both sides, with the exception of the defendant himself, agreed that there was a serious fracture of some sort, and there was ample evidence that by the use of reasonable care and skill the defendant should at least have been able to determine that the plaintiff was suffering from some serious injury, which required treatment of a character entirely different from that which was in fact administered.

There was, however, error in permitting a hypothetic question to be asked an expert witness for the plaintiff, calling for an opinion as to the defendant's diagnosis and treatment, when the question omitted to advise the witness as to the nature and result of two roentgenograms made and used by the defendant for the purpose of diagnosis, although the roentgenograms did not reproduce the parts of the pelvis where the fracture or fractures occurred, and did not show a fracture, while roentgenograms taken by others after the defendant ceased his treatment plainly showed a fracture. A hypothetic question must embody substantially all the undisputed facts relating to the subject on which the opinion of the witness is asked. The pertinent inquiry was not whether or not there was a fracture in fact, but whether, on all the data considered by the defendant in his diagnosis, his conclusion that there was no fracture was arrived at in the exercise of due care. The roentgenograms formed one of the most important items of evidence on which the diagnosis and treatment were based.

Evidence of Contract to Pay for Operation

(Harrington v. Legge (Wis.), 177 N. W. R. 865)

The Supreme Court of Wisconsin says that the plaintiff was under a yearly contract with a railway company to treat, without charge to them, all of its employees injured in the course of their employment who came to him for treatment. The defendant testified that, on a Thursday, while assisting other section hands in moving a railroad frog, he felt a severe pain in his groin as a result of a rupture; that he was compelled to desist from heavy work for that day, but remained about the work until the usual quitting time, and went back on the two days following, although not able to perform his usual duties, so far as any heavy manual work was concerned. There was evidence from some of his coemployees as to his complaining of pain at the time in question and desisting from work. On Saturday evening he walked a considerable distance to the plaintiff's office, accompanied by an interpreter, and practically all the conversation that ensued was through the interpreter. The plaintiff testified that, on the defendant's stating his employment by the railway company, he asked him if he had sustained an injury while so employed, and the defendant said that he had not, that his trouble had been of some standing, and that he had been unable to get any slip or certificate from the foreman to present to the plaintiff, as the company's physician, in accordance with the custom. The plaintiff then informed the defendant that his trouble was of such a nature that it did not come within the scope of the plaintiff's employment by the railway company, and that he could not look after the case on the latter's account; but if the defendant was not satisfied with that conclusion, he might confer with the company's claim agent on the following Monday morning. The defendant then asked whether the plaintiff would look after it as a private case, and what it would cost. The plaintiff said that he would charge $50, instead of his customary charge of a larger amount, and that the defendant would have to pay the hospital expenses. The defendant agreed thereto, returned on Monday morning, was taken to the hospital to which the plaintiff was accustomed to take his private patients, was operated on, was given after-care by the plaintiff, and was finally discharged as cured. The plaintiff testified further that the operation disclosed that the rupture was of longer standing than from the preceding Thursday, and that if the defendant's contentions, as made on the trial, were correct as to the manner in which the rupture was sustained by heavy lifting, the pain would have been so severe that he would have been unable to do anything on the same day on which it occurred. The defendant testified that the agreement was that if he was injured in the employ of the company, the operation would be free to him; otherwise he must pay for it, $30. The supreme court thinks the testimony was clear and positive that there was an agreement between the parties that the defendant was to be operated on by the plaintiff for the hernia, for which $50 was to be paid by the defendant personally, and that pursuant to such agreement the defendant returned on Monday morning; wherefore a judgment in favor of the plaintiff for $50, with interest and costs, is affirmed.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

October, 1920, **77**, No. 2

Parole System and Its Relation to Occupational Therapy. A. J. Rosanoff and T. S. Cusack, Kings Park, N. Y.—p. 149.
Cases Illustrating Some Common Types of Errors in Psychiatric Diagnoses. L. G. Lowry, Boston.—p. 165.
Insanité, Legalité, Insecurité. C. B. Burr, Flint, Mich.—p. 181.
Case of Hypopituitarism. H. S. Newcomer and E. A. Strecker, Philadelphia.—p. 193.
Structural Brain Lesions of Dementia Praecox. A. E. Gurd, Ann Arbor, Mich.—p. 201.
Gas Neurosis Syndrome. H. S. Hulbert, Chicago.—p. 213.
Outpatient or Dispensary Clinics for Mental Cases. E. S. Abbott, Philadelphia.—p. 217.
Outpatient Clinic in Connection with a State Institution for Feebleminded. W. E. Fernald, Waverley, Mass.—p. 227.
Responsibility of Public in Relation to State Medical Institutions. W. H. Pritchard, Columbus, Ohio.—p. 237.

American Journal of Obstetrics and Gynecology, St. Louis

October, 1920, **1**, No. 1

Program for American Gynecology. R. L. Dickinson, New York.—p. 2.
Demonstration of Certain Transition Stages from Benign to Malignant Conditions in Ovary, Uterus and Vulva. T. W. Eden and G. Ley, London, England.—p. 11.
Induction of Labor at Term. C. B. Reed, Chicago.—p. 24.
Prophylactic Forceps Operation. J. B. DeLee, Chicago.—p. 34.
Extraperitoneal Cesarean Section. J. A. McGlinn, Philadelphia.—p. 45.
Cranial and Intracranial Birth Injuries. H. Bailey, New York.—p. 52.

November, 1920, **1**, No. 2

*Analysis of Failures in Radium Treatment of Cervical Cancer. F. J. Taussig, St. Louis.—p. 113.
Operation or Radium for Operable Cases of Cervical Cancer. W. P. Graves, Boston.—p. 122.
Equipment, Organization and Scope of Teaching in Obstetric Department of Modern Medical School. B. C. Hirst, Philadelphia.—p. 128.
Gynecologic Problems in Industrial Medicine. H. E. Mock, Chicago.—p. 131.
Development of Prenatal Care and Maternal Welfare Work in Paris Under Children's Bureau of American Red Cross. F. L. Adair, Minneapolis.—p. 141.
Importance of Follow-Up System for Obstetric Patients. G. W. Kosmak, New York.—p. 155.
*Indications for Operation in Spreading Peritonitis of Postabortal and Postpartal Origin. J. O. Polak, Brooklyn.—p. 161.
Errors in Gynecologic Diagnosis Due to Misplaced Organs. R. Peterson, Ann Arbor, Mich.—p. 170.
Treatment of Pregnancy and Labor Complicated by Cardiac Disease. F. S. Newell, Boston.—p. 179.
Blood Transfusion in Obstetrics and Gynecology. H. C. Williamson, New York.—p. 188.

Radium Treatment of Cervix Cancer.—Eighty-six cases of cervical cancer and six cases of vulvar cancer have been treated by Taussig by radium, partly in combination with surgical measures. The immediate results are far from inspiring, Taussig says, but this must, in part, be attributed to the fact that in the first year and a half every case was included no matter how wretched the patient's condition. He agrees with Bailey that the chance for doing harm in desperate cases is so much greater than for doing good that these women had better be given acetone treatment and opiates. Radium only leads to increased suffering. The technic of the radical Wertheim operation for cervical cancer was simplicity itself, compared to the technic of radium treatment in this disease. In cervical cancer of the inoperable stage, Taussig advises an intracervical application of 125 mgh., from 25 to 50 mgh. of which, in the form of a steel needle or 0.5 mm. silver capsule, is placed high up the cervical canal and the remaining 75 to 100 mg. in silver capsules packed against the cervical ulcer in accordance with its size and shape. The vagina and rectum are protected by a paraffin covered lead shied from 2 to 3 mm. thick and gauze used to immobilize the application. The application should last for from twenty to twenty-two hours, a total of from 2,500 to 2,750 mg. hours. Two weeks later a massive roentgen-ray dose over from 6 to 8 "portals" should be given. The second treatment should be given only in case the retrogression is not complete after eight weeks have elapsed. Then a small dose of from 1,800 to 2,000 mg. hours filtered with silver and 1 mm. of brass should usually be given as high as possible in the vaginal fornix. The cervix is usually obliterated at this time.

Treatment of Postabortal Peritonitis.—Observations in the clinical study of postabortal and puerperal peritonitis led Polak to conclude (1) that nature is competent to localize the lesions in the large majority of peritoneal extensions; (2) that advancing peritonitis has a definite symptom complex which is constant when the inflammation is spreading; (3) that in the presence of this symptom complex drainage is necessary and definitely lowers the mortality. The patient is placed in the high Fowler position; one or more icebags are applied to the abdomen and a proctoclysis by the Harris method of glucose-sodium-bicarbonate solution is begun. The pain is relieved by routine morphinization, small doses being given hypodermically at regular intervals. If the patient's resistance is capable of taking care of the peritoneal invasion, in from twelve to twenty hours there will be a definite recession in the severity of the symptoms and a fall in the polymorphonuclear percentage. On the other hand, if her resistance is insufficient, or the virulence of the invading organism greater than the protective reaction, the pulse, temperature and local abdominal symptoms will remain stationary or increase in severity; and most important of all, the polymorphonuclear percentage will rise. In the presence of these conditions drainage is imperative. A posterior vaginal incision through the fornix will usually liberate a pint or more of thin, flocculent blood-stained serum which on culture returns numberless streptococci.

American Journal of Physiology, Baltimore

Nov. 1, 1920, **54**, No. 1

*Effect on Composition of Blood of Maintaining an Increased Blood Volume by Intravenous Injection of a Hypertonic Solution of Gum Acacia and Glucose in Normal, Asphyxiated and Shocked Dogs. H. L. White and J. Erlanger, St. Louis.—p. 1.
*Functional Activity of Capillaries and Venules. D. R. Hooker, Baltimore.—p. 30.
*Visceral Sensory Nervous System. I. Lung Automatism and Lung Reflexes in the Frog (R. Pipiens and R. Catesbiana). A. J. Carlson and A. B. Luckhardt, Chicago.—p. 55.
*Effect of Epinephrin on Venous Blood Pressure. H. Connet, Baltimore.—p. 96.
Visceral Sensory Nervous System. II. Lung Automatism and Lung Reflexes in Salamanders (Necturus, Axolotl). A. B. Luckhardt and A. J. Carlson, Chicago.—p. 122.
Changes in Acid and Alkali Tolerance with Age in Planarians. J. W. MacArthur, Toronto, Canada.—p. 138.
*Alkaline Reserve of Blood of Insane. N. Suitsu, Philadelphia.—p. 147.
Gastric Tonus of Empty Stomach of Frog. T. L. Patterson, Kingston, Canada.—p. 153.
Studies on Submaxillary Gland. VI. Dependence of Tissue Activity on Volume Flow of Blood and on Mechanism Controlling this Volume Flow of Blood. R. Gesell, Berkeley, Calif.—p. 166.
VII. Effects of Increased Salivary Pressure on Electrical Deflections, Volume Flow of Blood and Secretion of Submaxillary Gland of Dog. R. Gesell.—p. 185.
VIII. Effects of Atropin on Volume Flow of Blood Electrical Deflections and Oxidations of Submaxillary Gland. R. Gesell.—p. 204.

Effect on Blood of Injection of Glucose and Gum Acacia Solutions.—A strongly hypertonic glucose and gum acacia solution was injected by White and Erlanger intravenously into normal, asphyxiated and shocked dogs, and the resultant changes in blood volume and composition were studied. The immediate effect was a marked increase in blood volume; in normal and asphyxiated animals the blood volume then gradually fell toward but did not completely return to normal in several hours. The blood volume, markedly diminished in shock, is increased to above its normal level by the injection, and then gradually falls to or below its normal level. The absolute plasma protein is increased slightly or not at all in normal animals and in asphyxiated animals; in an animal which had been bled there was a slight increase when the amount withdrawn was allowed for. The absolute amount of plasma protein is markedly diminished in shock, is increased by the injection and the increase continues for some time after the injection. It is believed that at least a part of the increase in plasma protein following the injection in shock is due to a passage of protein in through the vessel walls. Gum acacia seems to take the place of plasma protein in holding water in the circulation. There is a marked hyperglycemia immediately after the injection in normal animals; this is accentuated by morphin and asphyxia. The blood sugar falls to

or nearly to normal within two hours. In shocked animals the blood sugar behaves much as in normal animals. No hemolysis, hematuria, hemoglobinuria, albuminuria, cylindruria, fluctuations in body temperature or any other untoward effects were observed as a result of the injections.

Functional Activity of Capillaries.—A method is described by Hooker whereby the peripheral circulation (particularly the capillaries and venules) in the cat's ear may be observed and photographed. It is thus possible to study in the living mammal the capillary circulation, investigation of which in the intact animal has hitherto been limited to the frog.

Visceral Sensory Nervous System.—This report is the beginning of an investigation and analysis of the reflexes evoked by the visceral sensory nerves in all the groups of vertebrates available for study. To date Carlson and Luckhardt have studied the reflexes from the visceral afferent system involving the skeletal musculature, the respiratory mechanism, the gastro-intestinal tract, the heart and blood vessels, and the urinary bladder.

Cause of Venous Blood Pressure Rise After Epinephrin Injection.—The various possible factors operating to produce the rise in venous blood pressure which occurs in the intravenous injection of epinephrin are discussed by Connet. The two factors chiefly responsible are the decreased heart rate bringing about decreased unit output of the heart, and a vasoconstrictor mechanism in the veins. The effect of the first factor is accentuated by the fact that the arterial pressure is greatly raised by epinephrin in the doses used. The first factor has been recognized before. Reasons are given why the second factor was previously overlooked. In dogs with good vagal tone and under an anesthetic, the rise in venous pressure is almost entirely due to the first factor. In cats whose vagal tone is not nearly as strong, the second factor predominates. This nervous mechanism is shown to be acted on peripherally by epinephrin and to be depressed by ether, curare and histamin, especially the last.

Alkaline Reserve of Blood of Insane.—The results of the studies reported on by Suitsu indicate that: (1) The alkaline reserve of the blood of the insane appears to fall within the limits considered normal for healthy persons; (2) there are no demonstrable differences in the absolute amounts of the alkaline reserve of the bloods from excited or depressed patients here studied; (3) the variability of the plasma carbon dioxid combining capacity seems to be higher in the insane than in the small group of normals here studied; (4) no noteworthy differences obtained in the alkaline reserve of the blood taken three and a half and fourteen hours after eating.

American Journal of Public Health, Chicago

November, 1920, **10**, No. 11

Present Status of Plague, Historical Review. W. H. Kellogg, Sacramento, Calif.—p. 835.
Methods of Plague Control. F. Simpson, Angel Island, Calif.—p. 845.
Roden Plague. C. L. Williams, New Orleans.—p. 851.
Botulism. E. C. Dickson, San Francisco.—p. 865.
Comparison of Bacterial Counts from Machine and Hand Washed Dishes and Their Significance. R. S. Dearstyne, Charlotte, N. C.—p. 871.
Value of Brilliant Green in Eliminating Errors Due to Anaerobes in Presumptive Test for B. Coli. T. C. Muer and R. L. Harris, Brooklyn.—p. 874.
Urgent Need for Standardization of Laboratory Work. A. Lederer, Chicago.—p. 876.

Annals of Surgery, Philadelphia

November, 1920, **72**, No. 5

*Hypophysial Duct Tumors. W. C. Duffy, New Haven, Conn.—p. 537.
Treatment of Craniocerebral Wounds and Its Results. H. Neuhof, New York.—p. 556.
New Appliance to Secure Proper Position and Steadiness of Head During Brain Operations. T. M. Johnson, Philadelphia.—p. 589.
Perforating Gastric and Duodenal Ulcer. C. E. Farr, New York.—p. 591.
*Persistence of Pyloric and Duodenal Ulcers, Following Simple Suture of Acute Perforation. R. Lewisohn, New York.—p. 595.
*Carcinoma of Duodenum. E. R. McGuire and P. G. Cornish, Jr., Buffalo.—p. 600.
*Ptosis of Third Portion of Duodenum with Obstruction at Duodenojejunal Junction. E. P. Quain, Bismarck, N. D.—p. 604.
*Jejunocolic Fistula. M. Ware, New York.—p. 607.
Relation Between Intestinal Damage and Delayed Operation in Acute Mechanical Ileus. F. T. Van Beuren, New York.—p. 610.
Orthopedic Treatment of Burns. A. H. Harrigan and S. W. Boorstein, New York.—p. 616.

Hypophysial Duct Tumors.—Two cases of hypophysial duct tumors are recorded by Duffy. A previously healthy man, 35 years old, began rather abruptly to suffer with severe headaches, progressive diminution of vision, and loss of libido sexualis. Positive Wassermann tests resulted in antisyphilitic therapy. Later, the diagnosis of tumor in the hypophysial region was made by means of radiography. The visual fields showed a bitemporal hemianopsia. The exploratory craniotomy was complicated by unusual hemorrhage; however, the cyst presenting above the sella and between the optic nerves was evacuated, and the patient recovered from the immediate effects of the operation, but died twelve days later with symptoms indicating failure of the medullary centers (about one and one-half years after the onset of symptoms). At the necropsy of this slightly obese man a squamous epithelial intracystic papilloma was found presenting above the enlarged sella with remains of the anoterior hypophysial lobe and traces of pars intermedia preserved in the basal sector of the cyst wall. Death apparently was caused by increased intracranial pressure (cerebral edema). The testes showed histologically a marked atrophy. Thymus was retrogressive. Other glands of internal secretion showed no definite changes. Changes of subsidiary interest were found in the lung (bronchopneumonia, pulmonary infarcts) and appendix. A female child, 11 years old, who had suffered with headaches of increasing frequency for five years, progressive failure of vision for one year, and occasional projectile vomiting for eight months, was brought to the hospital because of increasing disability and the recent appearance of stupor. Instead of retardation of sexual characters, there was perhaps slight exaggeration of same. Radiography showed a suprasellar nodular shadow, due to calcification; partial destruction of posterior clinoids, and separation of the frontoparietal sutures suggesting a secondary hydrocephalus. At the exploratory craniotomy a suprasellar cyst containing 30 c.c. of fluid was evacuated and partly extirpated. Histologic examination of tissue from the wall of the cyst showed definite squamous epithelial cell derivatives presenting the picture of adamantinoma. Death apparently from cerebral edema. No necropsy.

Perforated Pyloric and Duodenal Ulcers.—Lewisohn says that closure of the perforation, gastro-enterostomy, and pyloric exclusion should be the method of choice in the treatment of perforated pyloric and duodenal ulcers. Simple closure of the perforation should be reserved for only those patients whose general condition is so poor that even a rapidly performed gastro-enterostomy would be too much of an operative risk.

Carcinoma of Duodenum.—Four cases are reported by McGuire and Cornish. Two cases are primarily carcinoma of the bile duct with secondary involvement of the duodenum, and two are definitely primary in the duodenum.

Ptosis of Duodenum.—Quain believes that this pathologic condition of the duodenum is not at all uncommon, and that careful search with fluoroscope and more diligence in abdominal exploration will prove this belief to be well founded. He has seen five cases. Duodenojejunostomy was made between the bulging duodenum and the descending jejunum. The results have been all that could be desired in the four patients who have been under observation.

Jejunocolic Fistula.—Following resection of 6 inches of the transverse colon for the removal of an annular carcinoma which manifested itself with symptoms of intestinal obstruction and performance of Ware's patient developed a jejunocolic fistula in the vicinity of the splenic flexure. A preoperative diagnosis was made and a successful operation was performed.

Archives of Dermatology and Syphilology, Chicago

December, 1920, **2**, No. 6

*Resistance (or Immunity) Developed by Reaction to Syphilitic Infection; Some Effects of Suppression of This Reaction. W. H. Brown and L. Pearce, New York.—p. 675.
*Provocative Reactions in Cerebrospinal Fluid in Neurosyphilis. H. C. Solomon, Boston, and J. V. Klauder, Philadelphia.—p. 679.
*Clinical Study of Reactions Following Intravenous Administration of Arsphenamin in Nonsyphilitic Persons. A. Strickler, H. G. Munson, Sidlick and A. Strauss, Philadelphia.—p. 692.
*Effects of Arsphenamin on Renal Function in Syphilitic Patients. J. A. Elliott and L. C. Todd, Charlotte, N. C.—p. 699.

Penicillium Brevicaule Var. Hominis Saccardo, 1877, Brumpt and Langeron, 1910, in American Case of Ringworm of Toes. F. D. Weidman, Philadelphia.—p. 703.
Dermatobia Hominis; Report of Case. T. B. Magath, Rochester, Minn.—p. 716.
Anaphylactoid Dermatitis Due to Direct Contact with Animal Epidermal Structures. A. J. Markley, Denver.—p. 722.
So-Called Dermatitis Dysmenorrheica; Report of Case; Review of Literature. F. Wise and H. J. Parkhurst, New York.—p. 725.
Varioliform Atrophic Folliculitis. L. Savatard, Manchester, England. —p. 743.
Scleroderma as Possible Manifestation of Chronic Arsenic Poisoning. S. Ayres, Jr., Los Angeles.—p. 747.

Reaction to Syphilitic Infection.—Experiments reported on by Brown and Pearce show that, in so far as syphilitic infections in the rabbit are concerned, the reaction which takes place at the site of inoculation tends to dominate the entire course of the infection; that, in effect, this reaction either inhibits or obviates the necessity for the development of lesions elsewhere and, conversely, that the reduction or suppression of the reaction by the use of any means that does not exercise an equal effect on the organisms themselves, removes this control and tends to increase the occurrence of generalized lesions and the severity of the infection.

Provocative Reactions in Cerebrospinal Fluid in Neurosyphilis.—Case histories are given by Solomon and Klauder to show that after treatment the cerebrospinal fluid, which was negative before treatment, may become positive in all routine tests, or a weakly reacting fluid may become much stronger. This is called a provocative reaction. It may be accomplished by the intravenous or intraspinal injection of arsphenamin. This is compared to the Herxheimer reaction or the production of neurorecurrences and is considered as the laboratory analogue. The provocative reactions are shown to occur in both the ventricular and spinal fluids. This is not a frequent phenomenon, and patients with vascular neurosyphilis with negative cerebrospinal fluids may not react in this manner. However, diagnosis may occasionally be made clear in obscure cases. In none of the cases in this series was the provocative reaction obtained with the blood serum. Despite the increase in the strength of the spinal fluid reactions, clinical improvement may result, and continued treatment may again produce a negative fluid.

Reactions Following Intravenous Administration of Arsphenamin in Nonsyphilitics.—The percentage of reactive symptoms following intravenous injections of arsphenamin was found by Strickler to be equal in both syphilitic and nonsyphilitic patients. The two most important factors in the production of arsphenamin reactions are (1) the patient and (2) the medicament. Of these two factors, the medicament is far more potent in causing reactive symptoms; the untoward phenomena may be produced either by some impurity in the arsphenamin or by some chemical reaction between the arsphenamin and the chemical constituents of the blood, or both factors may be operative at the same time.

Effects of Arsphenamin on Kidney Functions.—The findings reported by Elliott and Todd suggest that the admitted inadequacy of the phenolsulphonephthalein test to detect acute nephritides applies also to syphilitic nephritis.

Arkansas Medical Society Journal, Little Rock

November, 1920, **17**, No. 6

Fundamental Cause of Abnormality. D. C. Walt, Little Rock.—p. 125.
Analysis of More Than Two Hundred Cases of Epilepsy Treated with Luminal. C. C. Kirk.—p. 128.

Boston Medical and Surgical Journal

Dec. 9, 1920, **183**, No. 24

Syphilis Clinic: Its Organization, Equipment and Personnel. H. Goodman, New York.—p. 667.
Tinea Capitis; Roentgen-Ray Treatment. C. G. Lane, Boston.—p. 673.
*Significance of Functional Albuminuria in Young Men at Harvard University. D. C. Parmenter, Boston.—p. 677.
General Practitioner's Practice. P. R. Withington, Milton.—p. 681.
An Unusual Nephritis. F. Van Nuys, Weston.—p. 683.
Nontuberculous Complications of Pulmonary Tuberculosis. H. F. Gammons, Dallas, Texas.—p. 685.

Significance of Functional Albuminuria.—Approximately 8 per cent. of the students examined by Parmenter showed albumin in the urine. The examination of the sediment in all cases, showed nothing more than in occasional cylindroid or a few squamous cells. Of these forty men, six were excluded as having organic heart lesions which might account for their albuminuria. In the second examination some weeks following, sixteen of these thirty-four still persisted in showing albumin. In the third examination, made two weeks later, six of the thirty-four still showed albumin. The sediment of the final six showed nothing with the exception of a few cylindroids in two cases. This would seem to show that approximately 5 per cent. had a transitory albuminuria which may be designated, perhaps, as functional. Hence, it seems justifiable to Parmenter to disregard the transitory type of albuminuria, except as an index of physical ability during a definite time of life. The orthostatic type, on the other hand, while indicative of no physical deficiency serious enough to bar the individual from athletics seems worthy of close observation.

Dec. 16, 1920, **183**, No. 25

Differential Diagnosis of Tuberculosis. E. O. Otis, Boston.—p. 695.
Roentgen-Ray Diagnosis in Phthisis. F. W. O'Brien, Boston.—p. 702.
Samuel Fuller, the Pilgrims' Doctor. C. H. Bangs, Boston.—p. 708.
*Malignant Disease of Kidney with Unusual Symptoms. J. D. Barney, Boston.—p. 710.
Case of Acute Encephalomyelitis with Necropsy. H. Osgood, Buffalo. —p. 712.

Malignant Disease of Kidney.—The symptoms in one of his cases led Barney to make a diagnosis of "probably a nontuberculous pyonephrosis, possibly due to calculus." Operation disclosed a hypernephroma. The cardinal symptoms of renal tumor—hematuria, pain and tumor—were present to a greater or less degree, in this case, but the picture was so definitely one of an inflammatory process that the possibility of neoplasm was lightly, if at all, considered. The second case, in which the symptoms were also misleading was rightly diagnosed before operation because of the fact that a pyleogram showed marked deformity of the left renal pelvis, the injected fluid (25 per cent. sodium bromid) being scattered around in irregular masses. Careful abdominal examination showed for the first time a definite, but vague mass, apparently fixed, in the left upper quadrant. A diagnosis of malignant disease of the left kidney was made. Operation was considered futile. In the third case a diagnosis of malignant disease of the bladder was made and the kidney was not suspected until a very extensive metastasis in the femur pointed the way to the kidney as being the seat of an adenocarcinoma.

Florida Medical Association Journal, St. Augustine and Jacksonville

November, 1920, **8**, No. 5

Diagnosis of Ectopic Gestation. T. Truelsen, Tampa.—p. 71.
Treatment of Syphilis of Central Nervous System. R. N. Greene, Jacksonville.—p. 73.
Different Types of Diarrhea. G. M. Niles, Atlanta, Ga.—p. 75.

Illinois Medical Journal, Oak Park

October, 1920, **38**, No. 4

Fifty Per Cent. of Sickness Cannot Be Prevented. E. MacD. Stanton, Schenectady, N. Y.—p. 293.
Difficulties Encountered in Dealing with Mental and Delinquent Cases. E. A. Foley, Chicago.—p. 296.
Individual Preventive Medicine. A. Weld, Rockford.—p. 300.
Personal Experiences in U. S. Army Debarkation Hospital No. 5, Grand Central Palace, New York City. H. L. Kretschmer, Chicago.—p. 306.
Endocrine Malfunction and Epilepsy. A Syndrome. W. G. Parker, Mt. Vernon.—p. 309.
Headaches: With Special Reference to Those of Nasal Origin. R. Sonnenschein, Chicago.—p. 315.
Treatment of Goiter with Radium. A. N. Clagett, Chicago.—p. 318.
Intestinal Stasis and Constipation: Its Causes and Treatment from a Nonsurgical Standpoint. K. B. Luzader, Greenville.—p. 321.
Treatment of Perforated Appendix. J. F. Sloan, Peoria.—p. 323.
Peritonsillar Abscess and Its Radical Treatment. L. Ostrom, Rock Island.—p. 325.
Laboratory as Aid in Diagnosis and Treatment of Diseases of Thyroid. O. J. Elsesser, Freeport.—p. 328.
Removal of Nail from Left Bronchus by Aid of Fluoroscope. A. Werelius, Chicago.—p. 335.
Is Human Eye Degenerating? W. O. Nance, Chicago.—p. 335.
Trocar Thoracotomy Versus Rib Resection in Acute Empyema. O. F. Shulian, Quincy.—p. 339.

November, 1920, **38**, No. 5

Some Aphorisms of Endocrines. H. M. Brown, Milwaukee.—p. 397.
Rational Program for Prevention of Pollution of Lakes and Streams P. Hansen, Chicago.—p. 404.
Early Diagnosis of Syphilis. C. C. Kost, Dixon.—p. 409.

Sarcoma of Kidney. J. Welfeld, Chicago.—p. 412.
Plea for Early Recognition of Renal Tuberculosis. D. N. Eisendrath, Chicago.—p. 414.
Neglected Form of Cervical Endometritis. H. T. Byford, Chicago.—p. 417.
Influence of Mind on Body: Its Limitations and Modus Operandi. M. Solomon, Chicago.—p. 419.
Von Pirquet Feeding System. E. Lackner, Chicago.—p. 425.
Some Things About Empyemata. F. B. Lusk, Chicago.—p. 429.
Progress of Medical Science During World War. W. A. N. Dorland, Chicago.—p. 434.
Physician as a Citizen. C. E. Humiston, Chicago.—p. 443.

Journal of Biological Chemistry, Baltimore

November, 1920, **44**, No. 2

An Apparatus for Continuous Dialysis or Extraction. H. Mann, New York.—p. 207.
*Determination of Total Alkaline Reserve of Body. W. Prentice, H. O. Lund and H. G. Harbo, Minneapolis.—p. 211.
*Variation in Cholesterol Content of Serum in Pneumonia. H. A. Kipp, Pittsburgh.—p. 215.
*Nature of Chlorin Combination in Urine. A. T. Cameron and M. S. Hollenberg, Winnipeg, Canada.—p. 239.
Fat Content of Embryonic Livers. C. G. Imrie and S. G. Graham, Toronto.—p. 243.
*Some Effects of Water Soluble Vitamin on Nutrition. W. G. Karr, New Haven, Conn.—p. 255.
Metabolism Studies with Diets Deficient in Water Soluble (B) Vitamin. W. G. Karr, New Haven, Conn.—p. 277.
Some Amino-Acids from Globulin of Coconut as Determined by Butyl Alcohol Extraction Method of Dakin. C. O. Johns and D. B. Jones, Washington, D. C.—p. 283.
Hydrolysis of Globulin of Coconut, Cocos Nucifera. D. B. Jones and C. O. Johns, Washington, D. C.—p. 291.
Some Proteins from Mung Bean, Phaseolus Aureus Roxburgh. C. O. Johns and H. C. Waterman, Washington, D. C.—p. 303.
Chemistry of Whitefish Sperm. V. Lynch, Cincinnati.—p. 319.
Alkali-Reserve of Marine Fish and Invertebrates. Excretion of Carbon Dioxid. J. B. Collip, Departure Bay, Canada.—p. 329.
*Studies on Blood Fat. I. Variation of Blood Fat Constituents of Rabbits Under Normal Conditions. Y. Horiuchi, Boston.—p. 345.
*Id. II. Lipemia in Acute Anemia. Y. Horiuchi, Boston.—p. 363.
*Deficiency in Heat-Treated Milks. A. L. Daniels and R. Loughlin, Iowa City.—p. 381.
Biochemicals Studies on Marine Organisms. II. Occurrence of Zinc. M. Bodansky, Galveston, Texas.—p. 399.
Estimation of Phenolic Substances in Urine. F. F. Tisdall, Baltimore.—p. 409.
Composition of Inosite Phosphoric Acid of Plants. R. J. Anderson, Geneva, N. Y.—p. 429.
*Experimental Studies on Growth. XVI. Influence of Brain Tissue, Freed from Cholesterol, on Growth of White Mouse. T. B. Robertson and L. A. Ray, Toronto, Canada.—p. 439.
*Diastatic Ferments of Blood. D. S. Lewis and E. H. Mason, Montreal, Canada.—p. 455.
Certain Factors That Influence Acetone Production by Bacillus Acetoethylicum. C. F. Arzberger, W. H. Peterson and E. B. Fred, Madison, Wis.—p. 465.
Dihydroxyphenylalanine, Constituent of Velvet Bean. E. R. Miller, Auburn, Ala.—p. 481.
*Test for Antiberiberi Vitamin and Its Practical Application. C. Funk and H. E. Dubin, New York.—p. 487.
Amino-Acids of Gelatin. H. D. Dakin, Hudson, N. Y.—p. 499.
Quantitative Method for Determination of Vitamin in Connection with Determinations of Vitamin in Glandular and Other Tissues. F. K. Swoboda, Chicago.—p. 531.
Studies of Autolysis. VI. Effect of Certain Colloids on Autolysis. H. C. Bradley and H. Felsher, Madison, Wis.—p. 553.
*Experiments on Carbohydrate Metabolism and Diabetes. III. Permeability of Blood Corpuscles to Sugar. M. B. Wishart, New York.—p. 563.
Antiscorbutic Content of Certain Body Tissues of Rat. H. T. Parsons, Baltimore.—p. 587.
Antiscorbutic Requirement of Prairie Dog. E. V. McCollum and H. T. Parsons, Baltimore.—p. 603.

Alkaline Reserve of Plasma.—In the experiments made by Prentice and his co-workers, Lund and Harbo, the alkaline reserve of plasma before etherization was about 0.23; after etherization, from 0.016 to 0.018.

Cholesterol Content of Blood Serum in Pneumonia.—The cholesterol content of the blood serum in pneumonia, Kipp found, exhibits the following variations: (*a*) A primary hypocholesterinemia, the degree of which is dependent on the degree of lung involvement and the intensity of the infection. (*b*) A secondary hypercholesterinemia in the period of convalescence, during and continuing for a varying period of time after the resolution of the pneumonic exudate. (*c*) A return to the normal cholesterol content of the serum. The variations in the cholesterol in the blood serum in pneumonia is dependent on the activity of the leukocytes, and being transported by them to the area of acute inflammation acts as an antitoxic substance, neutralizing the bacterial toxins and those arising from the disintegration of tissue in the process of the inflammatory reaction. It also may serve as an adjuvant in the development of antigens which initiate the process of resolution of the pneumonic exudate. The utilization of cholesterol in acute toxic infections is directly proportional to the severity of the disease. The development of empyema definitely alters the variation of cholesterol in the serum in pneumonia.

Chlorin in Urine.—In the absence of chlorate or similar medication, Cameron and Hollenberg state, chlorin occurs in urine as chlorid only; organic chlorin and chlorin oxy-acids are absent.

Water Soluble Vitamin Is Appetite Provoking.—Karr claims that some relation exists in the dog between the desire to partake of food and the amount of the so-called water soluble B vitamin ingested. Brewery yeast, bakers' yeast, tomatoes and milk were investigated and found to be sources of this appetite provoking substance. Quantitative data are presented to show the relative potency of the various products investigated. The brewery yeast tested was much more potent than bakers' yeast. Drying at 100 C. does not affect the efficacy of these vitamin preparations, but autoclaving at 120 C. for from three to four hours leads to some destruction. Mammalian polyneuritis was induced in several animals and the symptoms were alleviated within a few hours by the ingestion of brewery yeast or tomatoes, substances rich in water soluble vitamin.

Studies on Blood Fat.—The blood fat constituents of nineteen normal rabbits, of different sizes and on different diets, have been determined by Horiuchi. The fat constituents of the plasma are markedly less than in the corpuscles. Cholesterol is one third of that of human beings, lecithin one half, and total fatty acids about two thirds, while the difference of corpuscle fats is very small. Rabbits as well as human beings and dogs have a racial and individual constancy of fatty substances in blood. It is definitely shown that the blood fat values are practically stable, even when 10 c.c. of blood are taken every day, if the duration of bleeding lies within three or four days. This is particularly so on the fat-free diet. When 10 c.c. of blood are drawn every day for a longer period, however, changes in amount of fat constituents take place.

Lipemia in Acute Anemia.—Lipemia, higher than any reported in alimentary lipemia in animals or in the blood of severe human diabetic acidosis, was produced by Horiuchi by a single hemorrhage on a rabbit. The duration of the lipemia of acute anemia is relatively short.

Deficiency in Heat Treated Milks.—In the process of heating milk, the calcium salts are rendered more or less insoluble, depending on the length of time the milk is heated. In this insoluble form they may be lost, owing to the fact that some of the precipitate adheres to the container, as in the case of long pasteurized or slowly heated milk, while some, for example in evaporated milk, separates out on standing. When especial care was taken to include the insoluble material by colloidal suspension, results comparable to those on raw and quickly boiled milk were obtained. Daniels and Loughlin secured no data indicating that either the fat soluble or the water soluble vitamin in milk is affected by heat treatment. Nor is the casein apparently affected. Rats fed superheated milk supplemented with calcium phosphate properly incorporated made normal growth gains. The inferior growth of rats on the long heat treated and superheated milk appears to be due wholly to the readjustments of the inorganic complexes. The application of these findings to infant nutrition is under investigation.

Influence of Brain Tissue on Growth.—The nervous system can be shown (*a*) by its importance for the regeneration of lost parts, (*b*) by the significance of the ratio of brain weight to body weight in determining the longevity of animals, and (*c*) by the dystrophy following on nerve section, to exert a stimulating influence on the growth of parenchymatous tissues. The stimulation of growth by nervous tissues may conceivably be due either to the nervous impulses conducted by them or to a substance officiating as a growth hormone which is conducted to the tissues wholly or in part through nerve fibers. Brain tissue from which the cholesterol has been extracted by cold acetone, administered by mouth, in

dosage of 36 mg. daily, is without effect on the growth of mice. It is inferred by Robertson and Ray that if nervous tissues do contain a potent catalyzer of growth other than cholesterol it is also soluble in cold acetone and is removed from the brain in the process of extracting the cholesterol.

Diastatic Ferments in Blood.—Lewis and Mason failed to find any constant increase in the blood diastase in diabetes and there does not seem to be any direct relation between the height of the blood sugar and the diastatic activity. There is a marked variation in the level of the ferments in cases of nephritis, but no evident connection between the type of disease and the diastatic activity, and no constant relation between the progress of the lesion and the diastatic index.

Test for Antiberiberi Vitamin.—Funk and Dubin describe a method for testing the antiberiberi vitamin content of various substances, using autolyzed yeast as a standard. They have also been able to carry out a systematic fractionation of autolyzed yeast testing the vitamin activity at each stage of the purification.

Carbohydrate Metabolism and Diabetes.—No specific alteration of the distribution of sugar between the blood plasma and corpuscles was found by Wishart in experiments with different quantities and modes of administration of glucose, different degrees of pancreatectomy and diabetes, lipemia, acidosis, exercise, cold, or different levels of the renal threshold. Inasmuch as the sugar content of the corpuscles is subject to considerable irregularities from unknown causes and without known physiologic significance, plasma analyses should be preferred to those of whole blood for experimental and clinical purposes.

Journal of Immunology, Baltimore

September, 1920, **5**, No. 5

Simplification and Partial Revision of Factors Involved in Complement Fixation Test for Infectious Abortion in Cattle. C. S. Gibbs and L. F. Rettger, New Haven, Conn.—p. 399.
Antigenic Properties of Globin; Independence of Properties of Serum and Tissue Proteins, as Exemplified by Absence of Antibody from Globin of an Immunized Animal. C. H. Browning and G. H. Wilson, Glasgow.—p. 417.
Protective Value of Pneumococcus Vaccination in Mice and Rabbits. A. B. Wadsworth, Albany, N. Y.—p. 429.
*Serologic Relationships of Liver and Kidney. M. S. Fleisher, T. G. Hall and N. Arnstein, St. Louis.—p. 437.
Placental Transmission of So-Called Normal Antibodies. III. Antilysins. G. C. Reyman, Copenhagen, Denmark.—p. 455.
*Serologic Study of Cholera Immunity. I. Agglutinin. R. Umemura, Tokyo.—p. 465.
*Value of Intrapalpebral Mallein Test in Diagnosis of Glanders. E. H. Mason and R. V. B. Emmons.—p. 489.

Serologic Relationships.—By means of complement fixation reactions and absorption of serums prepared against guinea-pig liver and kidney, Fleisher and others have been able to show that there exists a definite relationship between the anti-organ serums and the homologous antigens. The antigens and antiserums are not simple but are complex in nature and probably are composed of several different partial antigens and immune bodies. It is suggestive that possibly these partial antigens and antibodies can be arranged in three groups: The first having a very wide range of activity and having a relationship to all or practically all tissues of the species; the second having a limited range of activity and having relationship only with the tissue used in the preparation of the antiserum; and the third being possibly a group of antibodies, also rather limited in their range of activity but reacting only or more strongly with individual tissues other than the one used as the immunizing substance.

Serology of Cholera Immunity.—Experiments done by Umemura have shown that agglutinin begins to come down at the time when the serum proteins begins to precipitate by the addition of ammonium sulphate, and is completely precipitated at from 4.6 to 4.8 saturation, and, therefore, agglutinin is present in both euglobulin and pseudoglobulin and never in either exclusive of the other. It is present also in fibrinoglobulin, but not in albumin. There is a uniform relationship between the agglutinin and the protein bodies in all animals (horse, goat and rabbit).

Value of Intrapalpebral Mallein Test.—Mason and Emmons consider the complement fixation reaction (intrapalpebral mallein) of greatest value, it being positive in 75 per cent. of the ninety-four horses examined. The agglutination reaction ranks second, confirming a suspicious mallein test with a definitely positive reaction in 44 per cent. of the cases in the same series. Therefore, they would conclude that the complement fixation reaction is of the greatest benefit in confirming a doubtful intrapalpebral mallein test, but that this reaction should be considered in conjunction with an agglutination test, one to act as a check on the other.

Medical Record, New York

Dec. 4, 1920, **98**, No. 23

Anxiety Neurosis. H. Laveson, New York.—p. 925.
Survey of Gastrointestinal Methods. J. L. Kantor, New York.—p. 929.
Monakow's Views on Cerebral Localization. J. Smith, New York.—p. 931.
Stammering, As It Is. E. Tompkins, Pasadena, Calif.—p. 935.
Treatment of Gastric Achylia. M. Sturtevant, New York.—p. 939.
Fighting Fire with Fire. G. L. Servoss, Reno, Nev.—p. 941.
*Unusual Case of Lateral Sinus Thrombosis. J. Friedman and S. D. Greenfield, Brooklyn.—p. 942.
Is Tuberculosis Contagious? G. K. Dickinson, Jersey City, N. J.—p. 943.

Lateral Sinus Thrombosis.—In the case recorded by Friedman and Greenfield a diagnosis of sinus thrombosis was not made, nor even suspected, before operation. There were no symptoms nor signs at the time that pointed to anything more than the usual "typical mastoid." The operation disclosed an infected thrombosis completely occluding the vessel lumen with a collection of pus in the sinus. The internal jugular was ligated but not resected. The patient made an uneventful recovery.

Mental Hygiene, New York

October, 1920, **4**, No. 4

Medical Opinion on Questions Relating to Sex Education and Venereal Disease Campaigns. J. B. Watson, Baltimore, and K. S. Lashley, Minneapolis.—p. 769.
Out-Patient Clinic in Connection with State Institution for Feebleminded. W. E. Fernald, Boston.—p. 848.
Extending Field of Conscious Control. W. A. White, Washington, D. C.—p. 857.
Mental Hygiene of Industry. M. C. Jarrett, Northhampton, Mass.—p. 867.
State Hospital in Relation to Public Health. F. E. Williams.—p. 885.
Imbalance in Development of Personality as a Cause of Mental Ill Health. E. B. Spaulding, New York.—p. 897.
Public-School Clinics in Connection with State School for Feebleminded. E. E. Woodill.—p. 911.
Mental Hygiene Requirements of a Community. T. H. Haines, Jackson, Miss.—p. 920.
Industrial Cost of Psychopathic Employee. M. J. Powers, New York.—p. 932.
Mental Mechanisms. G. W. Mills, New York.—p. 940.

Nebraska State Medical Journal, Norfolk

November, 1920, **5**, No. 11

Corneal Ulcers and Treatment. E. B. Brooks, Lincoln.—p. 313.
Empyema. B. L. Shellhorn, Peru.—p. 317.
What Shall We Do With Old Folks? W. S. Fast, Ingleside.—p. 319.
Tuberculosis in Children, a Family Disease. N. Jones, Omaha.—p. 324.
Antrum as Main Source of Nasal Catarrh. H. B. Lemere, Omaha.—p. 326.
Cataract; Intracapsular Extraction; Case. W. D. Shields, Holdrege.—p. 332.

New York Medical Journal

Dec. 11, 1920, **112**, No. 24

Faculty and Student. J. A. Fordyce, New York.—p. 921.
*Polymorphism of Epidemic Lethargic Encephalitis. A. Gordon, Philadelphia.—p. 926.
*Cutaneous Anthrax. J. R. Graham, New York.—p. 931.
Roentgen-Ray Treatment of Epithelioma with Thin Filter. J. Remer and W. D. Witherbee, New York.—p. 935.
Superficial and Deep Roentgen Dose Estimation. W. H. Meyer, New York.—p. 936.
Stereoscopic Campimeter Slate. R. I. Lloyd, Brooklyn.—p. 944.
Plea for Physicotherapy. J. Riviere.—p. 948.

Polymorphism of Lethargic Encephalitis.—Gordon states that lethargic encephalitis is a protein disease with its histologic characteristics of a definite type but with a great variety of localizations throughout the entire central nervous system.

Treatment of Cutaneous Anthrax.—The introduction of anti-anthrax serum directly into the body of the lesion itself by means of several small injections around the periphery of the eschar is endorsed by Graham. The method was evolved

by Joseph C. Regan. He uses from 7 to 10 c.c. locally, once daily, and at the same taime administers from 20 to 40 c.c. intramuscularly, or intravenously, if the bacillus is found in the blood. At Bellevue Hospital, where this idea has been put into effect in a routine way, they have not been so conservative, for there they have used the serum intravenously in all cases, and have repeated the doses locally and in the vein every four hours for several days at a stretch, without any serious or even especially unpleasant consequences. Practically all the cases this year have been treated by this method. The death rate in 1920 has been 10 per cent., only two of twenty patients so treated succumbing to the disease.

Pennsylvania Medical Journal, Harrisburg

November, 1920, **24**, No. 2

Practical Points in Heart Diagnosis. S. C. Smith, Philadelphia.—p. 49.
Errors and Oversights Resulting from Use of Blood Pressure Apparatus. G. E. Hein, Pittsburgh.—p. 55.
Transient Auricular Fibrillation. J. D. Heard and A. J. Colwell, Pittsburgh.—p. 59.
Treatment of Complicated Cleft Palate. J. B. Roberts, Philadelphia.—p. 64.
War Surgery of Face and Jaws as Applied to Injuries and Deformities of Civil Life. R. H. Ivy, Philadelphia.—p. 69.
Tuberculosis and Its Relation to Industrial Medicine. M. R. Taylor, Philadelphia.—p. 72.

Philippine Journal of Science, Manila

June, 1920, **16**, No. 6

Philippine Euphorbiaceae, III. E. D. Merrill.—p. 539.
*Determination of Glucose and Starch by Alkaline Potassium Permanganate Method. F. A. Quisumbing.—p. 581.
Growth of Rice as Related to Proportions of Fertilizer Salts Added to Soil Cultures. S. F. Trelease.—p. 603.
Social Bees of Philippine Islands. T. D. A. Cockerell.—p. 631.
*Protozoologic and Clinical Studies on Treatment of Protozoal Dysentery with Benzyl Benzoate. F. G. Haughwout, E. Domingo and W. De Leon—p. 633.

Determination of Glucose and Starch.—A new method for the analysis of starch and glucose has been developed by Quisumbing and applied to the determination of starch in commercial starch and flour. The method gives results as accurate as the Munson and Walker method with commercial starch. However, it cannot be used with flour with the acid hydrolysis method. For the determination of the latter, the saliva or the diastase method should be used. In either case, the alkaline potassium permanganate is practically as reliable as the Munson and Walker method.

Benzyl Benzoate in Protozoal Dysentery.—A case of acute balantidiosis, complicated by infections with hookworm and trichuris, was treated with benzyl benzoate. At the time treatment was started, twenty-three days after the onset of the disease, the patient was exhausted and apparently near to death. The abdominal pain and tenesmus associated with the dysenteric process disappeared within twenty-four hours after treatment was started and did not return again, even after treatment was stopped twenty-four days later. The parasites showed a tendency to diminish in numbers in the feces until the eighth day following the institution of treatment, when they suddenly appeared in the stool in immense numbers. On this day the stool was feculent, but contained mucus. No demonstrable tissue elements were found. Haughwout is inclined to regard this as the expression of a wholesale exodus of the ciliates from the tissues. He believes that had the patient not been under treatment, this "swarming" of the parasites would have been accompanied by pain, tenesmus, and the other symptoms constituting the dysenteric complex. That the patient did not exhibit the symptoms that ordinarily accompany the departure of such large numbers of parasites from the tissues is largely due to the selective action of benzyl benzoate. This drug, as Macht has shown, act in a manner similar to papaverin, in that it tends to inhibit peristasis of smooth muscle organs, and lowers their tonicity and relaxes their spasm.

July, 1920, **17**, No. 1

Military Surgeon and Civilian Practitioner. W. B. Banister, M. C., U. S. Army.—p. 11.
Obstetrics and Its Relation to Infantile Mortality. F. Calderon, Manila.—p. 19.
*Clinical Analysis of One Hundred Cases of Enterocolitis with Especial Reference to Edema, Dehydration and Putrid Odor of Stools. J. Albert and Fe Horilleno, Manila.—p. 27.
Complement Fixation Test for Syphilis; Incubation for Fixation at Ice Box Temperatures. J. W. Smith, Jr.—p. 31.
*Diphtheria in Philippine Islands. L. Gomez, A. M. Kapauan and C. Gavino, Manila.—p. 37.
Physician and Laboratory. J. E. Ash.—p. 47.
Keeping Qualities of Dried and Pulverized Vaccine Virus. O. Schobl.—p. 55.
Venom of Philippine Cobra (Alupong) Naja Naja Philippinensis. C. Monserrat, O. Schobl and L. E. Guerrero.—p. 59.
Clinical Forms of Panophthalmitis Observed in Philippine General Hospital. A. R. Ubaldo.—p. 65.
Corneal Paracentesis. H. Velarde.—p. 71.
Case of Pollakiuria Immediately Relieved by External Liberation of Pelvic and Iliac Portions of Ureter. J. Eduque.—p. 79.
Informal Presentation of Two Urologic Cases: Diverticulum of Bladder and Left Renal Calculus Complicated by Pyelitis. I. A. Pelzman.—p. 85.
*Streptococcus Hemolyticus: A Case Study. H. G. Johnson.—p. 91.
Clinical Studies on Lethargic Encephalitis. P. Lantin and W. Vitug.—p. 97.
Xeropthalmia in Fowls Fed on Polished Rice and Its Importance. L. E. Guerrero and I. Concepcion.—p. 99.
Dunham Fan in Roentgenograms. P. S. Seabold.—p. 105.
Disease Carrier Problem in Philippine Islands. C. Brillantes.—p. 109.
*Autoinfection, So-Called, During Puerperium. G. Rustia.—p. 119.

Enterocolitis.—Of the 100 cases analyzed by Albert and Horilleno, thirty-seven presented edema. Twelve patients died. Edema may be considered, therefore, as a not infrequent symptom of enterocolitis in children. It appears ordinarily after the first week of the onset of the disease, more commonly in the face; and, contrary to the opinions of others, the authors' experience has shown that when it appears at the end of the first week it usually means a favorable outcome. However, when it appears very late in enterocolitis with protracted course and frequent relapses, this symptom must be considered an unfavorable sign of prognosis, indicating chronic advanced toxemia or cachexia, or a complication of the kidney. Thirty-nine of the 100 patients presented dehydration, desiccation, exsiccation, or anhydremia, of which twenty-two died. It is therefore a sign of unfavorable prognosis. Putrid odor of stools was noted in eleven cases. Eight of these patients died.

Diphtheria in Philippines.—Diphtheria occurs in the Philippine Islands and shows practically the same clinical manifestations and bacteriologic and pathologic findings as in other countries. It is rather infrequent, and does not seem to be so contagious; nor does it develop in epidemic form. It occurs in all races and is more frequent in children during the first five years of life. In spite of antitoxin treatment, the mortality is higher than in other countries, which condition, Gomez says may be due to a greater prevalence of laryngeal cases. Postdiphtheritic paralysis is not of frequent occurrence.

Streptococcus Hemolyticus Infection.—Johnson records the case of a man, a victim of dementia praecox, who developed a sore throat. *Streptococcus hemolyticus* in nearly pure culture was obtained. Later, toxic symptoms became pronounced. A blood culture proved to be streptococcus. The case now resolving itself into a bacteremia and septicemia, the usual treatment of elimination, and alkalis and glucose by rectum was started. In addition, polyvalent antistreptococcus serum was given in 100 c.c. doses, every four hours, both intravenously and subcutaneously. The administration of the serum was continued throughout the disease. Blood cultures showed a diminution in the amount of growth. On the fifth day, the first metastatic involvement appeared in the metatarsophalangeal joint of the great toe of the right foot. The joint was opened and a small quantity of seropurulent fluid obtained. The same day the left knee became involved, and this went on rapidly to suppuration. Nearly overnight, a previously well joint would give signs of pus and have to be opened. The right knee, left ankle, left elbow, left knee, right wrist, right elbow, and right sacroiliac joints were all involved and were opened. A pure culture of streptococcus was obtained from the exudate from all the diseased joints. On the twelfth day, the right parotid gland became involved and progressed rapidly to a suppurative parotiditis, draining spontaneously through the external ear. During this time the blood cultures showed less and less growth until only a faint growth was obtained. Each culture showed the same organism. An autogenous vaccine was prepared and an initial dose of 2,000,000 given, and a second dose of 4,000,000. The serum was con-

tinued as before. About eight hours after the last dose of vaccine, the temperature suddenly rose to 104 F. the pulse became very rapid, and the patient was in extreme condition. The following morning, fluid was demonstrated in the right chest. The fluid showed streptococcus. The seventeenth day, a fluctuating swelling, the size of a grapefruit, was noted over the anterior aspect of the left chest. The area of cardiac dulness, and the dulness in the mass, and the fluid in the right and left chests, all merged together. Pus was obtained on aspiration. Approximately 200 c.c. of pus were removed through an incision. The abscess evacuated itself in spurts, and each spurt apparently corresponded to each heartbeat. The incision was enlarged and the cavity explored. An irregular hole, about the size of a 50-cent piece, was discovered through the intercostal muscles in the fifth interspace about the location of the costochondral junction of the fifth rib which was necrotic. The opening led directly into the pericardial cavity, and by inserting the finger into the same, the apex of the heart was felt distinctly under the finger. The patient died on the twentieth day. Necropsy demonstrated the pericardial sinus. The joint surfaces were eroded until the bare bone ends lay in direct apposition. Pus was obtained from the peritoneal cavity and from the spinal canal. This case was followed by another, with the primary infection in the lungs, which was demonstrated to be *Streptococcus hemolyticus* and went on to the same fatal termination, developing all the severe involvements, with the exception of the pericardium and joints.

Autoinfection During Puerperium.—Eighty cases were examined anterpartum by Rustia. The hemolytic streptococcus was present in fifteen cases; nonhemolytic streptococcus in three cases; bacteria other than streptococcus in fifty-three cases; sterile, nine cases.

So. Carolina Medical Association Journal, Greenville

November, 1920, **16**, No. 11

Hospital Standardization in South Carolina. J. R. Young, Anderson.—p. 270.
Significance of Nervousness in Children. J. F. Munnerlyn, Columbia.—p. 274.
Diphtheria. E. W. Carpenter, Greenville.—p. 278.
Epilepsy and Its Treatment. N. M. Owensby, Atlanta, Ga.—p. 279.
Institution of Rat Surveys. C. V. Akin.—p. 281.
Some Recent Experience in Kidney Surgery. G. T. Tyler, Greenville.—p. 284.

Tennesee State Medical Journal, Nashville

November, 1920, **13**, No. 7

Uterine Febroids. H. M. Tigert, Nashville.—p. 241.
The Dietetic and Medical Treatment of Gastric and Duodenal Ulcers. S. Harris, Birmingham, Ala.—p. 247.
Tabulations and Preliminary Observations of Reported Venereal Disease Cases. G. A. Hays, Nashville.—p. 253.
Milk in Its Relation to Public Health. M. Jacob, Knoxville.—p. 255.
The Cervix Uteri. V. D. Halloway, Knoxville.—p. 260.
Nutrition. J. T. Barbee, Knoxville.—p. 262.
A Plea for Early Operation in Puerperal Infection. J. H. Carter, Memphis.—p. 266.
A Consideration of Symptoms Due to Intracranial Pathology. B. F. Turner, Memphis.—p. 267.
Some Practical Points in Fractures. J. P. Baird, Dyersburg.—p. 269.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Nov. 27, 1920, **2**, No. 3126

Diagnosis and Treatment of Some Diseases of Endocrine Glands. G. R. Murray.—p. 807.
Fatal Case of Malignant Tertian Malaria Contracted in North of England. E. E. Glynn and J. C. Matthews.—p. 811.
Miner's Nystagmus: Suggestions for Its Prevention. D. L. Anderson. p. 813.
Coal Miner's Nystagmus and Its Predisposing Causes. A. J. Martin. p. 814.
*Treatment of Rheumatoid Arthritis by Vaccines. H. W. Crowe.—p. 815.
*Diphtheria Carrier of Unusual Type. J. Allen and D. R. Wood.—p. 818.
Life History of Ascaris Lumbricoides. F. H. Stewart.—p. 818.
Fibroma of Ileocecal Valve. J. C. Jefferson.—p. 819.
Intra-Uterine Diagnosis of Congenital Heart Disease. B. H. Stewart.—p. 819.
Cholecystitic Heart. H. L. Flint.—p 819.

Vaccine Therapy of Rheumatoid Arthritis.—The basis of the treatment in this series of 143 cases was the hypothesis put forward by Crowe in 1914, that rheumatoid arthritis is primarily due to *Staphylococcus epidermidis-albus* (var. deformans); that just as in tuberculosis, there are present in the majority of cases secondary infections, with or without a local focus; that these secondary infections cause the variety of joint manifestations; that where the radical treatment of a local infective focus, with or without vaccines, results in amelioration or cure of the disease, the explanation is that the system, relieved of some of its microbic enemies, had then been strong enough to overcome the primary organism; and, finally, that the *M. deformans* or its toxin acts primarily on the nervous system and are responsible for the neuropathies which are the predominating, if not the sole, symptom of uncomplicated rheumatoid arthritis.

Unusual Diphtheria Carrier.—In the case reported by Allen and Wood, the mother of a family had a small area of impetigo on the scalp; a swab from this was returned showing *B. diphtheriae*. She also had *B. diphtheriae* in the throat. The series of cases reported indicate very strongly the necessity of swabbing all contacts in the home irrespective of age and also of searching for and examining any other lesions.

Indian Journal of Medical Research, Calcutta

April, 1920, **7**, No. 4

Best Method of Obtaining Precipitating Antiserums. W. D. Sutherland and R. G. C. Mitra.—p. 669.
Technic of Agglutination. W. F. Harvey.—p. 671.
Production of High Titer Serums. W. F. Harvey.—p. 682.
Pellicle Formation in Broth Culture by B. Cholerae. K. R. K. Iyengar.—p. 701.
*Preparation of a Simplified Culture Medium for Field Workers. D. Norris.—p. 704.
Summary of Recent Observations on Anopheles of Middle East. S. R. Christophers.—p. 710.
Malaria of Monkeys. C. Donovan.—p. 717.
Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Values in Connection with Hookworm Inquiry in Madras Presidency. J. F. Caius and K. S. Mhaskar.—p. 722.
Dracontiasis in Animals; Guinea-Worm in a Cobra. D. A. Turkhud.—p. 727.
Arthropods of Medical and Veterinary Importance in Mesopotamia; Their Relation to Disease. I. Gad Flies of Mesopotamia. W. S. Patton.—p. 735.
Id. II. Mesopotamian House Flies and Their Allies. W. S. Patton.—p. 751.
*Use of Hydrocyanic Acid Gas for Fumigation. W. G. Liston.—p. 778.
Standardization of Disinfectants with Special Reference to Those Used in Chemical Sterilization of Water. S. R. Christophers, K. R. K. Iyengar and W. F. Harvey.—p. 803.
*Etiology of Sprue. T. Heaton.—p. 810.
Hook Worm Infection in United Provinces. J. W. D. Megaw.—p. 840.

Simplified Culture Medium; Caseinogen.—The preparation of a dry nutritive powder from caseinogen is described by Norris. This powder does not require the addition either of peptone or extractives but may be made up into solid nutritive medium merely by the addition of agar and normal saline or tap water. It is obvious, therefore, that it would be extremely useful for field workers both on account of its portability and the extreme ease with which it can be made into culture medium. It is suggested that the name "trypsinoids" be given to the powder. Similar experiments with ordinary brewers' yeast fresh and dried are described but it would appear under the conditions tried that caseinogen yields the more nutritive powder of the two.

Fumigation by Hydrocyanic Acid Gas.—Hydrocyanic acid gas is an effective disinfectant for bubonic plague and certain other diseases transmitted by porters or intermediary hosts. The disinfecting action of this gas is not due to the direct action of the gas on the germs which cause these diseases but to the fact that it kills the animals or insects which harbor these germs and protects them from the natural agencies which bring about their destruction. Owing to its characteristic odor, and to the existence of simple and delicate chemical tests for its detection, this very poisonous gas can be used safely by persons who exercise a moderate amount of caution. In addition to these important advantages the gas does not injure the most delicate fabrics or metals; it does not render food unfit for consumption; grain will germinate after exposure to the gas. Heat is not required for generating the gas so that the danger of fire is avoided and the gas is lethal for

vermin in so low a concentration when mixed with air that it is not then explosive. The chemicals for generating the gas are easily and cheaply obtained. The gas is very diffusible, it can rapidly penetrate between grain bags and other cargo where rats find shelter. It even penetrates for some inches into grain stored in bags or spread on a floor; it is easily and rapidly removed from rooms or holds by free ventilation. The details of its use, including apparatus are described by Liston.

Etiology of Sprue.—The peculiarities of the incidence and geographical distribution of sprue Heaton says point to a physiologic rather than to an infective cause. The immediate relief from all infective symptoms in response to nonspecific treatment is contrasted with the very slow and uncertain recovery of the digestive function. This also is taken to indicate that the digestive failure is the essential disability, and the infection secondary. The prominence of infective processes in the mouth in most sprue cases, and their tendency to relapse, cannot be explained by any physiologic failure of digestion. It is, however, even less easily explicable by any infective hypothesis, for it is in origin physiologic, depending essentially on lowered resistance; the actual infecting organism is accidental and variable.

Journal of State Medicine, London

November, 1920, **28,** No. 11

State, Doctor and Venereal Disease. J. H. Sequeira.—p. 327.
Harben Lectures, 1920. Lecture II. Antigens and Antibodies. M. Nicolle.—p. 343.
Case of Oriental Sore Cured by Intravenous Injections and Inunctions of Antimonium Tartaratum. G. C. Low.—p. 354.

Lancet, London

Nov. 27, 1920, **2,** No. 22

*Chorea. C. Wall.—p. 1081.
Acute Rheumatism in Children Under Twelve Years of Age. F. J. Poynton, D. Paterson and J. C. Spence.—p. 1086.
Senecio Poisoning. A. R. Cushny and H. E. Watt.—p. 1089.
Malignant Growths of Upper Jaw and Antrum; A Survey of Notes of Thirty-Nine Cases. E. D. D. Davis.—p. 1090.
Disappearance of Mediastinal Neoplasm Under Roentgen Ray and Radium Treatment. R. T. Lewis.—p. 1092.
Present Epidemic of Scarlet Fever. J. Brownlee.—p. 1093.
Case of Epidemic Myoclonic Encephalitis with Recovery. M. W. Bulman.—p. 1093.
Plastic Operation to Restore Part of Ear, Using a Silver Wire Frame. H. Curtis.—p. 1094.

Chorea.—The results of a study made by the authors at the Hospital for Sick Children, Great Ormond-street, of a severe outbreak of acute rheumatism in children under 12 years of age are set forth in this paper. The total number of cases was 172. In 40 per cent. there was an hereditary tendency. Nearly 13 per cent. died and over 17 per cent. became complete invalids. The most frequent solitary manifestation of rheumatism is chorea. Twelve of these patients died. Sixty-six per cent. showed some heart lesion. The twenty-two deaths in this outbreak of rheumatism were with one exception due to carditis. The exception was death from vomiting, acetonemia and collapse, apparently the result of pushing sodium salicylate. The fatal cases of rheumatism most frequently commenced with an acute arthritis, rapidly followed by carditis. Stress is laid on the association of severe stiff neck with serious heart disease. The idea that children's rheumatism is an infection from the bowel the authors state is an hypothesis unsupported by clinical evidence.

Dec. 4, 1920, **2,** No. 23

Mental Hygiene. E. F. Buzzard.—p. 1127.
Influence of Great War on Modern Surgery. C. F. M. Saint.—p. 1130.
*Case of Hystero-Epilepsy with Delayed Puberty. Treated with Testicular Extract. T. C. Graves.—p. 1134.
*Milk in Tropics. R. J. Blackham.—p. 1136.

Hystero-Epilepsy with Delayed Puberty.—Graves cites a case of hystero-epilepsy, associated with delayed puberty, observed in a twin, and successfully treated with testicular extract. A point on which he lays special stress. He says that the therapeutic value by oral administration of extracts of organs having internal secretions (apart from the thyroid and pituitary) has been the subject of skepticism on the part of some pharmacologist, and at best they have been regarded as having only a psychotherapeutic value as placebos, but in his case a real psychotherapeutic effect appears to have been produced. It is noteworthy that two observers found the same thing, namely, a diminution in the intensity of the symptoms when one tablet was administered and a nonrecurrence of the condition when fully under the influence of two tablets.

Dried Milk in Tropics.—Dried milk is a valuable food which has a wide sphere of usefulness, not only in the feeding of infants and invalids, but in domestic and commercial cookery. For use in the tropics and in places such as Malta, where cow's milk is unobtainable and goat's milk dangerous, it has a large range of application, and on long voyages it presents many advantages over condensed milk. From long and varied experience of its use in war and peace Blackham is inclined to think that milk powder presents the only solution at present available of the manifold problems associated with "milk in the tropics."

Medical Journal of Australia, Sidney

Oct. 9, 1920, **2,** No. 15

Intestine Obstruction. W. D. Upjohn.—p. 353.
Rôle Played by Physician and Surgeon in Treatment of Exophthalmic Goiter. W. J. S. McKay.—p. 357.

Oct. 16, 1920, **2,** No. 16

Present Problems of Visceral Syphilis. R. R. Stawell.—p. 371.
Suppurative Middle Ear. F. Andrew.—p. 376.
*Value of Oil of Chenopodium in Treatment of Strongyloides Infection. H. H. Willis.—p. 379.

Oil of Chenopodium in Strongyloides Infection.—The treatment employed by Willis consisted of the administration of oil of chenopodium, 0.06 c.c. for each year of age up to 20 years and 1.5 c.c. for adults, given as a single dose on an empty stomach and followed in one hour by a purgative dose of magnesium sulphate. Preliminary purgation was not deemed necessary. Fifty-eight persons were treated. This treatment was repeated after seven days, the same dose being given.

Medical Journal of South Africa, Johannesburg

September, 1920, **16,** No. 2

Venereal Disease in Transvaal Schoolchildren. C. L. Leipoldt.—p. 25.
Retrospect on Four Thousand Cases. G. P. Mathew.—p. 31.
Suicidal Strangulation. G. J. M. Meile.—p. 35.
Impressions of the Durban Congress. C. L. Leipoldt.—p. 36.

Archives Médicales Belges, Liége

July, 1920, **73,** No. 7

The Pathology of Charles the Fifth. Van Duyse.—p. 563.
*Heredity of Gastric Secretion. F. Dauwe.—p. 578.
*Early Postarsenical Neurosyphilis. R. Lakaye.—p. 587.

Heredity of Gastric Secreting Functions.—Dauwe describes twelve striking examples of inherited achylia or hypersecretion. One man had recurring attacks of pain and other disturbances from gastric ulcer, the first hematemesis at 25. Necropsy at 62 showed a perforated ulcer and scars of two ulcers at different points. The mother had had several attacks of hematemesis and other symptoms of gastric ulcer, and the man's brother has stenosis of the pylorus from cicatricial healing of an ulcer. Dauwe has been impressed with the longevity of families in which hypersecretion is common. It seems to be a local expression of general vigor. The teeth are usually good and the spirits, outside of pain periods. The families in which achylia is common have poor teeth, little appetite, rapid intestinal digestion, and tendency to atony. The gastric achylia develops at a certain period in life just as the members of a family may all become bald at about a certain age.

Postarsenical Neurosyphilis.—Lakaye's seven cases testify that meningosyphilis and neurosyphilis may develop early, after arsphenamin treatment, before the subsidence of the chancre. The Bordet-Wassermann reaction was positive in all while they had the chancre; the symptoms of the neurosyphilis developed suddenly from five weeks to three months after the last injection of the first series. It had been supposedly adequate, from 3.9 to 5.4 gm. in two months and a half. There had been no symptoms calling attention to the nervous system. Lumbar puncture at the close of the series might have given a hint, but it is difficult to persuade patients

to allow this. By following the arsphenamin course with a course of mercury at once, it might have been possible to ward off this early neurosyphilis. Three of the men presented facial paralysis, one optic neuritis, as also one woman, and one man had auditory neuritis with deafness. All recovered under combined treatment with small doses.

Bulletin de l'Académie de Médecine, Paris

Nov. 9, 1920, **84**, No. 35

Frequent Adulteration of Potassium Boro-Tartrate. P. Marie and others.—p.. 209.
*Surgery of Double Ureters. F. Legueu.—p. 213.
Athrepsia and Congenital Syphilis in Indo-China. A. Thiroux.—p. 215.
Benzyl Cinnamate plus Cholesterin to Immunize Against Tuberculosis. F. Barbary.—p. 218.

Surgery of Double Ureters.—Legueu found twenty-two instances of double ureters in the last few months; they were revealed by pyelography. This demonstrated in five of the cases that the lesion in the kidney was localized around the opening into one of the double ureters, while the rest of the kidney seemed to be sound. It thus proved possible to excise the diseased portion, leaving a sound ureter in the sound part of the kidney. In one case of bilateral renal tuberculosis, he resected part of the left kidney, leaving the sound part with the sound one of the double ureters. After recovery from this, he removed the right kidney entire; the patient is now doing well with only one kidney and the top of this kidney amputated.

Bulletins de la Société Médicale des Hôpitaux, Paris

Oct. 22, 1920, **44**, No. 31

Intercurrent Epidemic Encephalitis. Sicard.—p. 1243.
Cerebrospinal Fluid in Diphtheric Paralysis. De Lavergne.—p. 1246.

Bulletin Médical, Paris

Oct. 30, 1920, **34**, No. 51

Reinfection with Syphilis Three Years After Arsphenamin Treatment of Syphilitic Chancre. G. Thibierge.—p. 953.
*By-Effects of Arsphenamin. P. Gastou.—p. 954.
*Specific Treatment of Tabes. M. Ferrand.—p. 960.
Chancres on the Head. C. Simon.—p. 970.

Accidents with Arsphenamins.—Gastou discusses the causes, prevention and treatment of the immediate, the early and the delayed undesired reactions with intensive arsenical treatment of syphilis. He emphasizes that the cause may be from the toxicity of the drug, the method of application, or the intolerance of the subject, or all combined, and that the treatment should take account of the previous condition, reactions to previous injections, whether the disease is recent, in full activity, and whether there is any indication of a reaction on the part of the nervous system or viscera. The urine should be examined before every injection and special caution is necessary if it contains bile pigments, albumin or much sediment. The injection should always be made extremely slowly, watching for the least untoward sign. The physician realizing his civic responsibility should keep the record of these cases written up in full to date, and a solution of epinephrin should always be at hand to combat any signs of intolerance.

Specific Treatment of Tabes.—Ferrand regards the discovery of the chronic meningovascularitis of tabes as one of the most important acquisitions of the French school of pathology of the nervous system. It accompanies every case of tabes, and is responsible for a large number of the nontabetic nervous symptoms in the clinical picture. Prompt and vigorous treatment is indispensable, he reiterates, to arrest the evolution of this meningeal syphilosis. In the most favorable cases it may be possible to cure it before extensive and definite lesions of sclerosis and the consecutive degeneration have become installed. At least its progress can be retarded and the damage restricted. By systematic search for biologic and clinical signs of the incipient phase we can detect its first onset, and by striking hard at once may ward off further damage. Even with fully established tabes, specific treatment may mitigate many of the symptoms and arrest further progress for a long time. Small, repeated doses are advocated by some while others prefer large doses at longer intervals. He summarizes the experience of certain leading syphilologists in this line to date.

Gynécologie et Obstétrique, Paris

1920, **1**, No. 1

*Hypernephroma in the Uterus. H. Hartmann and A. Peyron.—p. 1.
*Obstetric Operations at Childbirth. G. Schickelé.—p. 19.
Influenzal Pneumonia Complicating Childbirth. E. Petersen.—p. 37.
Influenza at Copenhagen Maternity. E. Hauch.—p. 55.
Postpartum Lethargic Encephalitis. Couvelaire and Trillat.—p. 63.
Multiple Metastases with Ovarian Carcinoma. T. Cavour.—p. 71.
Congenital Lipomas in Round Ligaments. J. Ducuing.—p. 81.

Hypernephroma in the Uterus.—Hartmann and Peyron found in a case of abdominal tumor that a mass of tissue, resembling a putrid placenta, projected into the vagina. The patient was a woman of 58 in a grave septic condition, weak from repeated losses of blood. The uterus was curetted, bringing out large quantities of a soft, friable tumor tissue, part blackish and part a pinkish gray. A round hard mass that felt like a fibroma was left unmolested. Two months later abdominal panhysterectomy revealed that the tumor was an epithelioma of the uterus with the typical structure of a cortical hypernephroma. They have found eleven cases on record of hypernephroma in the broad ligament or ovary, but none originating in the uterus. Peyron also casually discovered a small hypernephroma in the testicle of a horse, and Gaudier has reported a case of abdominal tumor in a girl of 4 with precocious sexual characters. After removal of the tumor, which proved to be a hypernephroma, the breasts retrogressed and the hair on the body dropped out, but the bones still showed deficiency of calcium, confirming the endocrine disturbance. In the twelve cases of hypernephroma in genital organs only two have been free from recurrence, and there were two operative fatalities from involvement of adjacent organs. In the case here reported, there was recurrence the third month and the seventh month, both in the cicatrix in the vagina, but the tumors retrogressed under excision and radium. When last seen, two or three months later, not a trace of the tumor could be discovered, and the general health was excellent. Hypernephroma cells seem to be peculiarly susceptible to the action of radium.

Obstetric Operations.—Schickelé objects to the expression "the surgical era in obstetrics," saying that the modern operations on the gravid uterus at term represent merely progress in the art of obstetrics. He does not see much future for symphysiotomy or pubiotomy on account of the lacerations and mortality, but extols the advantages of abdominal cesarean section with a longitudinal incision in the lower segment of the uterus, reached through a transverse incision in the vesico-uterine peritoneum. The danger of hemorrhage and of rupture later is the same as with the classic technic, but infection develops in the pelvis or subcutaneous tissue and not in the peritoneum. He describes four successful cases of the kind with infection already installed in a contracted pelvis. Another series of cases described show the preferable technic when there is cancer of the uterus or rectum, or dystocia from other cause. With placenta praevia, he continues, statistics show a maternal mortality of from 8 to 10 per cent. and a fetal mortality of about 60 per cent. with the ordinary obstetric treatment while, with cesarean section, over 50 per cent. of the children have been saved and the risk for the mothers is scarcely more than 5 per cent. Those who died succumbed to their anemia rather than to the results of the operation, demonstrating that the decision to operate came too late. If the woman has been bleeding for several weeks or has a history of profuse hemorrhages at preceding childbirths, no time should be lost.

Paris Médical

Nov. 13, 1920, **10**, No. 46

*Treatment of Neurosyphilis. P. Ravaut, Arbeit and Rabeau.—p. 353.
*Blood Culture Medium. R. J. Weissenbach.—p. 363.
Familial Contagion of Lethargic Encephalitis. De Laroche.—p. 364.

Intraspinal Treatment of Neurosyphilis.—This communication from Ravaut's service in the Hôpital Broca relates the excellent results obtained with a hypertonic solution of neoarsphenamin mixed with the patient's own spinal fluid. The dose is from 4 to 6 mg. of the arsenical, and eight cases described demonstrate the benefit to be derived in meningomyelitis, tabes and general paresis when the most propitious moment for the injections is learned from the biologic reac-

tions in the spinal fluid. Some bear the injections better than others; probably the meninges are less pathologic.

Citrated Blood Culture Mediums.—Weissenbach expatiates on the advantages of whole blood, citrated, and laked with ether as a culture medium for all the micro-organisms which thrive on albumin or hemoglobin. He has been using it for four years with constant satisfaction.

Presse Médicale, Paris

Nov. 13, 1920, **28**, No. 83

*Classification of Infectious Jaundice. M. Garnier and J. Reilly.—p. 813.
*Carbon Monoxid Poisoning. Legry and Lermoyez.—p. 816.
Friedmann's Treatment of Tuberculosis. M. Nathan.—p. 818.

Classification of Jaundice.—Garnier and Reilly warn that spirochetosis should be suspected in every case of febrile jaundice; return of fever after a phase of apyrexia confirms the diagnosis. But if the fever persists during the entire phase of the jaundice and drops gradually by lysis, then typhoid or paratyphoid should be incriminated. In certain rare, mild cases, the origin of the jaundice is still a mystery, but, jaundice without fever or general symptoms excludes spirochetosis. If the jaundice is intense, sudden waves of fever later suggest secondary infection. If, on the other hand, the jaundice is slight, the general health good, and slight subfebrile temperature is noted about the fifteenth day, attenuated spirochetosis should be suspected. Grave spirochetal jaundice in their experience was encountered five times more frequently than acute yellow atrophy of the liver. Certain micro-organisms seem capable of causing jaundice, but their invasion is not invariably accompanied with jaundice, or it may be so slight as to escape attention.

The Spinal Fluid in Carbon Monoxid Poisoning.—The blood in the cerebrospinal fluid may reveal the carbon monoxid long after it has disappeared from the blood stream. In a case described the lumbar puncture fluid was almost pure blood, confirming the assumption of a congestive and hemorrhagic process in cortex and meninges as part of the reaction to the poison.

Nov. 17, 1920, **28**, No. 84

The Reducing Power of the Tissues. H. Roger.—p. 825.
Resection of Cancer in Carotid Region. J. L. Roux-Berger.—p. 827.
*Prophylaxis of Oriental Ophthalmias. J. David.—p. 828.

Prophylaxis of Ophthalmia in the Orient.—David is chief of the medical service in Lower Galilee, and he lauds the effectual action of instillation daily into the eyes of 2 drops of a 1 per cent. solution of zinc sulphate to which has been added 5 per cent. of the 1:1,000 solution of epinephrin. This seems to cure and ward off ordinary catarrhal conjunctivitis and render conditions unfavorable for trachoma. He urges the systematic enforcement of this measure in all schools, factories, and other groups in countries where ophthalmia is common.

Progrès Médical, Paris

Nov. 6, 1920, **35**, No. 45

Torsion of Ovarian Cysts. A. Aimes.—p. 483.
*Presumptive Signs of Tuberculosis. E. Queyrat.—p. 487.
Auscultation of Twin Pregnancy. S. E. Bermann.—p. 489.
The Symptoms of Love as Depicted in Ancient Literature. V. Niclot.—p. 489.

Presumptive Signs of Tuberculosis.—Queyrat refers to the aspect of the skin and the general build, his deductions based on his personal observations of tuberculosis developing later.

Nov. 13, 1920, **35**, No. 46

Delbet's Polyvalent Vaccine. R. Dupont.—p. 495.
*Syphilitic Neuritis After Emetin. Bourgin.—p. 500.
*Sulphur Treatment of Psoriasis. Delanoe.—p. 501.

Syphilitic Neuritis After Injection of Emetin.—Two years after cure of a syphilitic chancre under arsphenamin, the man of 45 was given on account of dysentery an injection of emetin in the right shoulder. Less than twenty-four hours afterward flaccid paralysis had developed in the right arm, followed six months later by painful neuritis in the same arm. Under a vigorous course of arsphenamin the symptoms subsided but not to a complete cure. Bourgin recalls a similar case reported last year by Nicaud in which multiple paralysis developed in diphtheria not long after a course of emetin treatment.

Sulphur Treatment of Psoriasis.—Delanoe reports the case of an Arab woman cured in a week of rebellious psoriasis by Bory's method of intramuscular injection of 8 c.c. of a mixture of 1 gm. precipitated sulphur; 5 gm. guaiacol; 10 gm. camphor; 20 gm. eucalyptol, and 100 gm. sesame oil. The injections are made once a week, with local application of coal tar.

Pediatria, Naples

Oct. 1, 1920, **28**, No. 19

*Nutritional Disturbance and Sepsis in Infants. S. Maggiore.—p. 889.
*Familial Spastic Paraplegia. S. de Stefano.—p. 895.
*Congenital Cyanosis. L. Moncalvi.—p. 907.

Nutritional Disturbance and Sepsis in Infants.—Maggiore has found that infants presenting the grave types of nutritional disturbance known as "decomposition" and "toxicosis" all had bacteria in the blood stream. This was constant in the 600 infants examined. On the other hand, his experience testifies that the mild forms of nutritional disturbance were due to lack of the proper vitamins in the food. He presents evidence to sustain these assertions, and emphasizes the brighter outlook which this view of nutritional disturbance entails, as infection can be warded off from infants or cured by vaccine therapy, while the lack of vitamins can be corrected.

Familial Spastic Paraplegia.—De Stefano has encountered five cases in two families in the last year, and two other members of one of the families are known to have suffered from the same. In his five cases the paraplegia developed at the age of 16 months, 2½, 4, 5 and 6 years, and there was a history of syphilis in both families. The condition was progressive, both physically and mentally, one child at least in each family being an idiot. In conclusion he suggests that intraspinal specific treatment might be given a trial in such familial cases if the child is seen before the initial inflammatory meningeal reaction has entailed irreparable degeneration.

Congenital Cyanosis.—Moncalvi's long study of congenital cyanosis is based on a case under observation from the age of 2 months to 5 years, the child still living in fair health. The roentgen-ray and other findings testify that there is dextrocardia and situs inversus with congenital stenosis of the orifice of the pulmonary artery, and probably a patent arterial duct and interventricular septum.

Policlinico, Rome

Oct. 11, 1920, **27**, No. 41

*War Deafmutism. E. Podestà.—p. 1139.
*Purpura from Iodoform Poisoning. G. Aperlo.—p. 1148.
*Pilocarpin for Edema of Glottis. C. Arrigoni.—p. 1150.

Oct. 18, 1920, **27**, No. 42

Present Status of Mycosis of Respiratory System. C. Basile.—p. 1171.
Sarcoma of Tibia at Site of Trauma. A. Magi.—p. 1174.
Quinin and the Gametes of Malaria. A. Neumann.—p. 1177.
Methylene Blue as Adjuvant to Quinin. A. de Blasi.—p. 1177.

War Deafmutism.—Podestà's extensive experience has convinced him that hysteria is not responsible for the inability to speak and hear in all the cases of deafmutism among the soldiers. The emotional stress of the war is enough alone to explain it in many cases without invoking hysteria.

Purpura from Iodoform Poisoning.—Aperlo dressed with iodoform gauze a tuberculous fistula in the lumbar region of a girl of 3 with tuberculous spondylitis. When the dressings were changed the seventh day, the temperature began to go up, and indicanuria and tube casts with edema indicated nephritis. On suspicion of iodoform poisoning, the medicated gauze was changed for plain gauze and conditions improved for three days but then symptoms of hemorrhagic purpura developed, in both skin and bowel. The patches of purpura were restricted to the face and labia majora. The child had been under iodo-iodid treatment for three months, and was probably saturated with iodin and its salts, but immediate removal of the iodoform gauze warded off the fatal termination of the iodin poisoning, such as four Italian clinicians have reported.

Edema of the Glottis in Measles.—Arrigoni states that in a recent epidemic of 160 cases of measles, in six there was edema of the glottis, and it was promptly arrested in three

by injection of pilocarpin. This was followed by profuse salivation, vomiting of mucus and sweating. The heart and lungs were watched over with care, and heart tonics given before and after the pilocarpin.

Oct. 25, 1920, **27**, No. 43

*Diabetes Insipidus and Infantilism of Pituitary Origin. G. Antonelli.—p. 1203.
Sodium Citrate in Pneumonia. G. Marcialis.—p. 1211.
Some War Surgery Experiences, G. Angioni.—p. 1213.

Diabetes Insipidus and Infantilism of Pituitary Origin.—Antonelli reports in detail a case in a young man in which by exclusion the pituitary seemed to be mainly responsible for the intense diabetes insipidus and the pronounced genital and somatic backward development. There was also moderate polycythemia with lymphocytosis and monocytosis.

October, 1920, **27**, Surgical Section No. 10

*Gastrocolic Fistula. A. Cividali.—p. 301.
Lessons from War Surgery. G. de Francisco.—p. 310.
*Heliotherapy and Surgical Tuberculosis. L. Negri.—p. 324. Cont'd.
Extraction of Bullet in Fourth Lumbar Vertebra. D. Taddei.—p. 336.

Fistula Between Stomach and Colon.—Cividali says that this can be suspected when there is fecal vomiting without symptoms of obstruction of the bowel, and rapid passage into the stools of substances ingested. A good test substance for the purpose is a suspension in milk or water of lycopodium seeds, as they slip easily through the fistula. The contents of the stomach pass unmodified into the colon, thus setting up irritation and bringing on diarrhea. Roentgenoscopy completes the diagnosis, and prompt operation cures as a rule. The case to which he calls attention is, he thinks, the one hundred and sixth on record in accessible literature. In a few instances the fistula grew up spontaneously, and in others it spontaneously closed after a gastro-enterostomy, but enteroanastomosis was the usual treatment. He cites Eisner's cases in which three years after the segment of the colon had been resected but left adherent to the stomach, the free ends merely closed with a few stitches, some of the contrast meal was seen to enter these excluded stumps. Three days later, however, they were free from bismuth, showing that they must participate in peristalsis. In exceptional cases it has proved possible to detach the colon and merely suture the gap left by what had been the fistula.

Heliotherapy in Surgical Tuberculosis.—Negri was able to apply heliotherapy successfully at Novara to twenty-five persons, including a number of cases of gland, and bone and joint lesions of the arms. With tuberculous lesions on the legs or in the vertebrae, the patients were taken into the clinic for as long as possible, and then allowed to continue the treatment at home. The altitude is only 216 meters above sea level, but excellent results were realized, even in a case of Pott's disease in which earning capacity was regained in a little more than a year. In one case the lesion in the knee was of twenty-five years' and in the neck and foot of ten years' standing. Thirteen of the patients were adults between 18 and 56, the others children from 3 to 16. In two of the cases the cure has been complete during more than six years to date. He emphasizes in the conclusion of this instalment that in all form of tuberculosis, reactivation of the skin is of the greatest importance.

Riforma Medica, Naples

Sept. 11, 1920, **36**, No. 37

*Extirpation of the Liver. A. Perroncito.—p. 830.
Congenital Cataract with Inherited Syphilis. S. Baldino.—p. 833.
*Ether-Oil Anesthesia by the Rectum. M. Balsamo.—p. 834.
Empyema and Abscesses in the Lungs. H. Lilienthal (New York).—p. 839.

Removal of the Liver.—Perroncito describes the results of anastomosing in dogs the vena porta and the vena cava and, after this had healed, removing the liver.

Ether-Oil Anesthesia by the Rectum.—Balsamo says of this form of anesthesia that there have been eight fatalities in a total of 2,500 cases in which it was applied. In his own 200 cases there were no threatening by-effects except in one instance in which a blunder had been made in the technic, but in three cases there was slight postoperative intestinal hemorrhage. In one of these the anesthesia had been applied five times in succession for a series of operations in reconstructing the nose. Tenesmus was never observed, nor any unfavorable action on liver or kidneys. This method of anesthesia, he declares, has a number of advantages and no contraindications, and does away practically with the necessity for an anesthetist. He adds that it may have been a coincidence, but the fact remains that during the same period there were a number of cases of postoperative pneumonia and bronchitis with other methods of anesthesia but none in these rectum cases. In hard drinkers the anesthesia was not always complete but was easily supplemented with a few whiffs by inhalation, as also when the ether-oil was expelled at once. This occurred in 50 per cent. of the children but rarely in adults. The operations were of all kinds, from mastoid operations to amputation of the thigh and nephrectomies.

Sept. 18, 1920, **36**, No. 38

*Anaphylactic Iritis. A. Mazzei.—p. 853.
*Medical Treatment of Incipient Cataract. N. Scalinci.—p. 854.
Finding of Uric Acid in Sputum. G. Felsani.—p. 858.
Immunity Phenomena in Protozoan Diseases. G. Galeotti.—p. 860.

Anaphylactic Iritis.—Mazzei found the reaction in the injured rabbit iris much more pronounced after a second injection of the serum than after the first injection. He accepts this as a manifestation of anaphylaxis.

Medical Treatment of Incipient Cataract.—Scalinci refers to cataract developing in persons with a special diathesis or dyscrasia. He recalls that an iodid solution undoubtedly passes into the interior of the eye and may restore the local metabolism to approximately normal and thus arrest the tendency to opacity. Favorable results have been reported from electrolytic introduction of iodin salts but this, like subconjunctival injections, must be reserved for exceptional cases. On the other hand, the iodid collyrium and bathing the eye with iodid solution are simple and easy procedures. The solution should not be stronger than 0.25 or 0.5 per cent. at first. Smarting usually indicates that the drug is not pure. He prefers a 1 per cent. solution of sodium iodid or rubidium iodid with addition of a trace of calcium phosphate. No benefit can be anticipated with secondary, congenital or stationary cataract. The best results are obtained when the lens is first beginning to show a tendency to opacity, especially incipient diabetes. The lens may still be transparent but changes in refraction show disturbance in the molecular imbibition of the hydrogel of the lens, and conditions may be restored to normal by the local iodid treatment. The widest field for its application is incipient senile cataract of the subcapsular, cortical type, which may be regarded as a manifestation of dyscrasia. The diathesis or dyscarsia should be combated at the same time. Dor asserts that of every ten patients with incipient cataract, eight can have the process arrested, one can be cured and only the tenth finds his condition not modified. Others are less enthusiastic, but Scalinci remarks in conclusion that this local iodid treatment is well worth a trial.

Archivos Españoles de Pediatría, Madrid

April, 1920, **4**, No. 4

Lethargic Encephalitis. E. Suñer Ordoñez.—p. 193.
Child of Six Sleeps in Lethargy for Month. E. A. García Sierra.—p. 204.
*Postdiphtheric Paralysis. A. R. Lozano.—p. 208.

Generalized Postdiphtheric Paralysis.—The diphtheria in the boy of 3 had not been recognized or treated, but the pains, head drop and generalized paralysis about a month after the febrile sore throat improved rapidly under antitoxin treatment. He was given a total of 20,000 units, 5,000 units on alternate days, and by the end of the month the only trace left of the paralysis was the loss of the knee jerk and an almost imperceptible difference in the use of the right leg.

June, 1920, **4**, No. 6

Acute Nephritis in Children. L. Morquio.—p. 321.
Syphilis and Marriage. A. E. A. Sainz de Aja.—p. 340.
*Rheumatism plus Chorea and Endocarditis. F. Viñals.—p. 351.

Rheumatism, Chorea and Endocarditis.—The boy of 3½ had acute articular rheumatism and before the month was out had developed both chorea and endocarditis. Then, under sodium salicylate, from 1.5 to 2 gm. daily, for three weeks, and then Fowler's solution for a month, all the symptoms disappeared and recovery seemed to be complete.

July, 1920, **4**, No. 7

*Meningococcus Meningitis in Infants. A. Cavengt Gutiérrez.—p. 385.

Meningococcus Meningitis in Infants.—Cavengt reports five cases; the onset was slow and insidious, in some merely suggesting digestive derangement. The course of the disease in these cases was from fifteen to thirty days. The antiserum proved promptly effectual in three cases but in the others the child was not seen in time. The serotherapy was supplemented with bromids and baths, with disinfection of the upper air passages and heart tonics; one infant had to be fed through a tube in the nose as trismus prevented feeding by the mouth. It is better to err on the side of injecting the antiserum in the absence of meningitis than to omit it in a case of actual meningitis. In one child of 2 months the treatment was not begun until the tenth day but the severe symptoms promptly subsided without leaving a trace. Vaccine treatment may prove a useful adjuvant.

Archivos de Neurobiología, Madrid

September, 1920, **1**, No. 3

*Words Beginning with P in Mental Test. E. Mira López.—p. 241.
*Hallucinosis in Syphilitics. J. M. de Villaverde.—p. 251.
*Climacteric Epilepsy. J. Sanchis Banús.—p. 274.
Endocrine Derangement with Progressive Lipodystrophy in Young Woman. G. Marañon.—p. 290.

The Psychologic P Test.—Mira López comments on the fatigue when tests of mental function are long and exacting, calling attention to the advantages of a test by having the blindfolded subject repeat as many words beginning with the letter P as he can think of in the course of five minutes. The words are recorded as he speaks them, listing each fifteen-second group separately. This test arouses interest and is thus a better index of the actual intelligence than parrot-like repetition of words, while it throws light on the vocabulary.

Hallucinosis in Syphilitics.—De Villaverde reports three cases in which hallucinations developed three months and a half, ten months and two years after infection. They occurred during periods of excitement and more or less delirium. Hallucinations of hearing were more common than the visual, and sometimes there were ideas of persecution. The attacks lasted several days and recurred, but finally subsided completely under vigorous specific treatment, and in all the blood and spinal fluid responded normally to various tests after recovery. In one of the cases the young man developed dementia praecox a year later. In three other cases the complete picture of catatonia developed a year or two after infection with syphilis, but one of the young men had had similar attacks at times from the age of 15, and did not contract syphilis till 20. The spinal fluid gave normal responses in all of them and also the blood in the first two. He compares this material with the literature on psychoses in syphilitics.

Climacteric Epilepsy.—Sanchis Banús reports three cases in which women with an inherited neuropathic taint and signs of degeneracy, but nothing serious enough to interfere with ordinary life, developed epileptic seizures for the first time during the endocrine stress of the menopause; a fourth patient with a similar history had a positive Wassermann reaction and is omitted from this discussion. The seizures occurred during the menstrual periods. Under ovarian treatment and bromids they did not return in the one case under observation for three months.

Brazil-Medico, Rio de Janeiro

Sept. 25, 1920, **34**, No. 39

Otorhinolaryngology Lecture. Renato Machado.—p. 637.
*Staphylococcus Septicemia. O. Clark.—p. 639.

Staphylococcus Septicemia Without Suppuration.—Clark has encountered six cases of rheumatoid disease in almost all the joints, causing intense suffering, with areas of necrosis in the jaws, accompanied by continuous or remittent fever, and *Staphylococcus aureus* cultivated from the blood and alveolar pyorrhea. The necropsy findings are given in one of the cases. In Lane's book, he says, a case is illustrated in which a similar multiple rheumatoid arthritis with the staphylococcus in the blood was cured by colectomy. Elsewhere it is stated that in such cases *Streptococcus longus* was found in 88 per cent. and the staphylococcus in scarcely 12 per cent. Clark does not venture to decide whether the teeth or the bowels were primarily responsible in his cases.

Gann, Tokyo

March, 1920, **14**, No. 1. Paging refers to summaries.

Induced Metastasis of Chicken Sarcoma. K. Tatenuma and S. Okonogi.—p. 1.
*Incipient Gastric Epithelioma. K. Murayama.—p. 2.
Transplantable Mouse Tumors. T. Kimura.—p. 5.

Incipient Gastric Cancer.—Murayama found some defect in the muscular wall of the stomach at the site of the incipient cancer in three cadavers. The fate of epithelial hyperplasia in the stomach thus seems to depend on whether the muscle beneath is intact or not. The cancer once started, whether metastasis develops early or not seems likewise to be connected with the depth of the defect in the muscle.

August, 1920, **14**, No. 2

Nucleus Segmentation, etc., in Excised Carcinoma Tissue. K. Oshikawa.—p. 9.
*Suprarenal Tumors in Horses and Cattle. T. Kimura.—p. 10.

September, 1920, **14**, No. 3

Inoculation of Sarcomatous Tumors in Oriental Negro Fowls. Y. Kon and T. Fujii.—p. 21.
Resistance to Heat of Chicken Chondroma Cells. T. Takamori.—p. 24.

Suprarenal Tumors in Horses and Cattle.—Kimura has 40 specimens of tumors from the slaughter houses. They were nearly all located on the testicle or skin but 5 were in the suprarenals. He has found records in the literature of similar suprarenal tumors from 24 horses and 46 cattle. Those in the cattle were of cortical origin in all but 10 of the total 38, while they originated in the medulla in all but 2 of the 26 cases in horses. The histologic findings in his 5 cases are shown in three plates.

Deutsche medizinische Wochenschrift, Berlin

Sept. 23, 1920, **46**, No. 39

Prevention of Postoperative Adhesions. Eden and Lindig.—p. 1069.
*The Surgical Treatment of Renal Calculi. M. von Brunn.—p. 1070.
Modified Method for Fixation of the Kidney. Von Mezö.—p. 1072.
*The Trousseau Phenomenon in Tetany. H. Schäffer.—p. 1073.
Roentgen Irradiation of a Distant, Large Field in Myomas and Metropathy. P. W. Siegel.—p. 1075.
Sensitization in Roentgenotherapy. L. von Rhorer.—p. 1077.
Outbreak of Nitrobenzol Poisoning in Infants. H. Ewer.—p. 1078.
Blood Pressure and Hypnosis. E. Lenk.—p. 1080.
Spread of Tuberculosis of Male Genital Organs. Praetorius.—p. 1081.
Latent Gout, Resulting Neuralgia; Treatment. Hesselbarth.—p. 1082.
*Technic of Cesarean Section. H. Martius.—p. 1082.
Deaf-Mutism from Practitioner's Standpoint. G. Brühl.—p. 1084.

Surgical Treatment of Renal Calculi.—Brunn cites eight cases of nephrolithiasis, in seven of which a cure was possible but in several instances only after serious and difficult intervention. He calls attention to the frightful inroads that renal calculi make on the parenchyma of the kidney when they are not removed in season. In all cases of renal calculi in which a spontaneous passing of the stones is unlikely owing to their size, prompt surgical intervention is strongly indicated. In the surgeon's hands the prognosis as regards a permanent cure is excellent.

The Trousseau Phenomenon in Tetany.—Since the Trousseau phenomenon has increasing importance in the diagnosis of latent tetany, Schäffer thinks that a more careful study of its mode of origin will throw light on attacks of tetany. He considers the question from three different standpoints: 1. Is the anemia produced by the pressure of the constricting band on the arteries of the upper arm essential in the production of the Trousseau phenomenon or is the manifestation due to stimulation of the nerve fibers? 2. If the cramp in the hand is due to nerve stimulation, is it the direct result of the stimulation of motor nerves or is it of a reflex nature due to excitation of sensory nerves? 3. Is the Trousseau cramp a form of tetanus or a purely tonic condition or a combination of both? He concludes that the Trousseau phenomenon in tetany is produced by the direct stimulation of the nerve trunks in the sulcus medialis. The arterial anemia in the arm is not essential. The phenomenon is of a reflex nature. The cramp is a form of tetanus. The participation of the tonic function of the muscle is at least probable. The

action current curve of the muscle after a prolonged spontaneous tetanic attack resembles that of the voluntarily innervated muscle when in a fatigued condition.

Technic of Cesarean Section.—Martius divides the history of cesarean section into five periods and considers the progress made in each period. The ancients performed the operation only on the dead mother. Pliny reports that a member of the Julian family owed his life to this operation, and the Julians derive their cognomen "Caesar" from *caedo*, to cut, so that cesarean section does not get its name from Caesar but the Caesars derive their name from the operation. The first authentic operation on a living woman dates back to 1610, Trautmann of Wittenberg being the operator. In the third period, the Porro period, from 1876-1882, the mortality of the mothers was decreased but the uterus was sacrificed. In the fourth epoch, by means of better suturing methods a conservative obstetric procedure was established. This is the period of classic cesarean section. The fifth period, which extends down to our own day, is characterized by the endeavor to discover a better method for infected cases, which led to the introduction of extraperitoneal cesarean section. It has reduced the mortality rate very much. But Martius thinks that it has now outlived its day and is at the present time seldom indicated. In uninfected cases he thinks it is unnecessarily complicated, and in infected cases of the milder type he prefers the intraperitoneal deep cesarean section as being simpler from the technical standpoint, less dangerous for the bladder, and it does away with the extensive wounds of the connective tissue. In severe infections he recommends total extirpation of the infected uterus, or, in young women, if it seems inadvisable to sacrifice the fertility of the mother, he advises the perforation of the living, necessarily already more or less damaged child. In determining the degree of the infection, we must rely on the general clinical impression, the amount of fever and the character of the pulse.

Deutsches Archiv für klinische Medizin, Leipzig

Dec. 12, 1919, **131**, No. 1-2

*The "Focal Reactions." R. Schmidt (Prague).—p. 1.
Continuous Arrhythmia with Auricular Tachysystoly. D. Gerhardt.—p. 35.
Dilatation of the Heart. W. Weitz.—p. 47.
Elimination of Water Through the Lungs. R. Siebeck and J. Borkowski.—p. 55.
Work Hypertrophy of the Heart. Hasebroek.—p. 62.
*Test for Tonus Function of Stomach. O. Bruns.—p. 70.
Defect in Auricular Septum; Three Cases. H. Zeidler.—p. 85.
Urea Content of Blood in Health and Disease. Von Dolivo.—p. 109.

Focal Reactions.—Schmidt reiterates that any and every irritation affecting the organism severely enough is liable to induce focal reactions, whether the irritation is endogenous, exogenous, vaccines, protein bodies or drugs. With any acute infectious sore throat or attack of gout, etc., there is always a possibility that it is merely a focal reaction in some chronic latent pathologic condition in tonsils or joints or elsewhere. He emphasizes further the close analogy between the focal and general reactions induced with tuberculin and with parenteral injection of milk, and advises supplementing the tuberculin test with the milk test. If the response to both is practically the same, the specificity of the tuberculin reaction should be regarded with much reserve.

To Estimate Contracting Power of the Stomach.—Bruns has found that rapidly filling the empty stomach with air throws light on the degree of tonus at the time. A ureter catheter with a condom tied on the tip is easily swallowed, the other end connected with a bromoform manometer, and this records fluctuations in the size and pressure in the stomach. The intragastric pressure keeps at a certain level, the stomach contracting around the air or the food in the stomach. This explains why the contrast meal does not settle down by gravity altogether. He found further that the protrusion of the abdominal wall is not due to the stomach but to a local reflex in the wall. His charts and other data confirm the energetic peristaltic increase in the pressure which accompanies the sensation of hunger. Peristaltic waves in the empty stomach may be responsible for our growing hungry. His research demonstrated also the influence of vagotonia on peristole and peristalsis.

Jahrbuch für Kinderheilkunde, Berlin

1920, **93**, No. 4

*Action of Magnesium on Metabolism. E. Schiff and E. Stransky.—p. 205.
*Residual Nitrogen in Blood of the Newly Born. A. Bálint and E. Stransky.—p. 210.
*Protracted Intubation. J. von Bokay (Budapest).—p. 214.
*Congenital Atresia of the Duodenum. A. v. Koós.—p. 240.

Influence of Magnesium Ions on the Metabolism.—Schiff and Stransky tabulate findings which apparently demonstrate that after subcutaneous injection of magnesium sulphate the elimination of calcium in the urine was much increased and the retention of calcium reduced. This throws a new light, they say, on the rôle of the magnesium ions in metabolism. Any disturbance in magnesium metabolism, tending toward abnormal retention of magnesium, would derange calcium metabolism at the same time, and entail undue losses of calcium.

Residual Nitrogen in the Newly Born.—Bálint and Stransky found the residual nitrogen content of the blood abnormally high in thirteen of twenty newly born infants, but it declined to normal by the fifth or sixth day. They ascribe the common uric acid infarcts to this.

Protracted Intubation.—Von Bokay reviews his twenty-eight years of experience with intubation, and especially his seventy-three cases of prolonged intubation in which he used the bronze tube coated with gelatin and alum to cure pressure lesions after the ebonite tube had been worn for from sixty to 244 hours. The entire period of intubation with both in turn had been from 150 to 637 hours. Only 9.5 per cent. of the children were over 6, and 40 per cent. were infants. The success of the medicated tube was complete; only in four instances was there any disturbance a few weeks later, requiring temporary resumption of the intubation or removal of a small growth on a vocal cord. One child is not included in the above statistics as the girl of 5 required laryngotomy and still has to wear her laryngotomy tube.

Congenital Atresia of the Duodenum.—Von Koós did not dare to apply gastro-enterostomy to the child of 13 months with extreme debility from incessant vomiting. The operation had revealed what seemed to be an hour-glass stomach, and a ligament apparently binding down the stomach was resected and the abdomen sutured. The child showed only transient benefit, and necropsy revealed congenital atresia of the upper duodenum, the ballooning of the bowel above the atresia having simulated half of an hour-glass stomach.

Monatsschrift für Kinderheilkunde, Berlin

October, 1920, **19**, No. 1

*Wildbolz Urine Test for Tuberculosis. Eliasberg and Schiff.—p. 5.
*Clinical Significance of Residual Nitrogen. Stransky.—p. 10.
Relative Quantities of Albumins and Globulins in the Blood Serum of Infants. Schiff and Roser.—p. 15.
*Cholesterin Content of the Blood Serum. Strathmann-Herweg.—p. 20.
*Familial Situs Inversus. K. Ochsenius.—p. 27.
The Transmission of Acquired Characters. A. Peiper.—p. 44.

Biologic Test for Active Tuberculous Focus by the Response to Intradermal Injection of Patient's Own Urine.—During the previous four months Eliasberg and Schiff have been trying Wildbolz' method for the diagnosis of tuberculosis in children, which was described in THE JOURNAL, Aug. 9, 1919, p. 456, and Dec. 18, 1920, p. 1755. Altogether they examined forty children. They cannot confirm the statements of Wildbolz in every particular but think the method is worth using. In order to form a correct judgment in regard to the relationship between allergy in the individual and the reaction produced by the tuberculin-like substance in the urine, they made control tests in the case of most of the children. In one group of children they injected the urine of other, nontuberculous patients who had shown no reaction after the injection of their own urine. They also applied the urine test to other anergic and allergic children, using the urine of markedly tuberculous children, so that a large percentage of the children, some of whom were known to be allergic and some of whom reacted positively to their own urine, were also tested as to their behavior toward the urine of other children. All the children with a negative Pirquet reaction and without a frank tuberculous focus were found, on examination, not to have the tuberculin-like substance in their urine. Children

who reacted to tuberculin were injected with the urine of these children and likewise showed no reaction. When these nontuberculous children were injected with the urine of frankly tuberculous patients they likewise gave no positive reaction. They regard the behavior of children so examined as furnishing proof of the specificity of the urine reaction. Further investigation, however, showed that the urine reaction of Wildbolz does not furnish an absolute criterion in regard to the activity of a tuberculous focus.

The Clinical and Prognostic Importance of Residual Nitrogen of the Blood in the Diseases of Childhood.—Stransky reports some of the results of his investigations on residual nitrogen in the blood of children. He made examinations in eighty-five cases, including fifty infants. He confirmed the finding of Balint that in the newborn, during the first few days, there is a high percentage of nitrogen in the blood, which diminishes toward the end of the first week. This increase may be connected with the appearance of the uric-acid infarct, and is probably caused by endogenous decomposition of protein or by cell decomposition. The increase is slight and has no clinical significance. In infancy the values scarcely differ from those of early childhood; the fluctuations are, however, more marked in infancy than in later years, for which reason slightly increased values must not be regarded at once as pathologic. Values ranging from 40 to 50 mg. per 100 gm. of blood were often found without accompanying pathologic symptoms. One possible explanation for the marked fluctuation in infancy is the fact that it is difficult to make the tests with the infant's stomach empty. Increased values in infants are mainly due to nutritional disturbances (alimentary intoxication, pedatrophy, dyspepsia). They are, in fact, pathognomonic for alimentary intoxication, but only persisting high values have any significance. In older children, nephritis is the principal cause of increased nitrogen values, but the nephritis is usually of an acute character, of short duration and of favorable prognosis.

The Cholesterin Content of the Blood Serum.—Strathmann-Herweg says that, if they are thriving, both breast-fed and artificially fed infants present normal cholesterin values in the blood serum, irrespective of whether their diet is rich or poor in fats. Children born prematurely are no exception to the rule. In exudative diathesis and in rickets certain variations from normal occur occasionally, but even here the values usually remain normal. Hypocholesterinemia was observed in anemia of various origin; also in infantile scurvy, and during the restorative process after disturbances of nutrition if unusually slow. In various infections—sepsis, pyodermia and tuberculosis—the values were usually normal but occasionally increased.

Familial Situs Inversus.—Ochsenius describes in two brothers, aged 6 and 12, respectively, two examples of heterotaxia and states that this is only the fifth case of familial situs inversus totalis in nontwins reported in the literature. Expatiating, he says that situs inversus is not a deformity in the true sense of the term. Both positions of the organs, the normal and the reversed, are only possible varieties of formation; it simply is true that the situs solitus vastly predominates. Situs inversus partialis is always to be regarded as a deformity and often gives rise to serious disturbances of development on account of the anomalous position of certain organs, whereas in situs inversus totalis developmental disturbances do not usually occur. Occasionally, however, duplication of organs occurs, a case having been described by Deselaers in 1912. Roentgen examinations are revealing, in recent years, more cases of anomalous position of organs than were formerly discovered.

Münchener medizinische Wochenschrift, Munich

Sept. 17, 1920, **67**, No. 38

*Metabolism Experiments in Grave, Afebrile Tuberculosis. E. Grafe.—p. 1081.
The Selective Affinity in Infection Processes. L. R. Grote.—p. 1083.
Septicemia Processes and the Effect of Measures Stimulating Function. W. Weichardt.—p. 1085.
Age and Sex in Relation to Osteomalacia. S. Hirsch.—p. 1087.
Environment in Relation to Ossification. Stettner.—p. 1091.
Arteriovenous Aneurysms of Common Carotid Artery and Cavernous Sinus in Relation to Pulsating Exophthalmos. C. Seyfarth.—p. 1092.
Improved Fluoroscopy of Internal Organs. Stein.—p. 1095.
Osteotomy for Rachitic Forward Curve of Femur. Boeckh.—p. 1095.
Collargol Treatment of Bladder Papillomas. G. Praetorius.—p. 1096.
"Use of the Term 'Coefficient' in Medicine." Marchand.—p. 1097.

Metabolism Experiments in Grave, Afebrile Tuberculosis.—Grafe says that from a practical standpoint it is important to know whether in afebrile tuberculosis there is an increase in the metabolism of the whole body in much the same manner as in carcinoma (Wallensteiner) and in leukemia (Grafe). On the basis of his observations over a period of years he feels himself in a position to decide the question. A table gives the results of his investigations in ten afebrile, very active, progressive, open, severe cases of tuberculosis. Of these ten cases only two showed no increase in metabolism, in one case the increase was very slight, while the others presented increases of from 20 to 36 per cent. He concludes that the gross calory requirement in severe, progressive tuberculosis, with the patient in bed and suffering from no marked dyspnea, no matter whether there is a moderate fever or no fever, is from 50 to 55 calories per kilogram of body weight, or about 1,500 calories per square meter of body surface. In cases with high fever, from 60 to 65 calories per kilogram, or about 1,700 calories per square meter are required for really adequate nutrition. In practice it may not be always possible to attain this standard, but we must strive for this goal.

Therapeutische Halbmonatshefte, Berlin

Sept. 1, 1920, **34**, No. 17

*Surgical Treatment of Pulmonary Tuberculosis. T. Naegeli.—p. 461.
The Drug Uzara. A. Gürber.—p. 465.
Caseinotherapy. N. Arweiler.—p. 470.
Gonorrhea and Its Treatment; Vaccinotherapy. C. Ahronheim.—p. 478.

Results of Surgical Treatment of Pulmonary Tuberculosis.—Quoting from Sauerbruch, Naegeli states that of 381 patients operated on, 134, or 35 per cent., have been cured to the extent that for at least a year and a half after the operation they have been free from fever, present negative sputum and are able to perform their regular daily work. They were for the most part severe cases, resistant to internal, dietetic treatment for many years, cases that on account of large caverns and copious expectoration were especially dangerous as sources of infection. Naegeli reviews the outcome with the various methods of surgical treatment employed in recent years—among others, artificial pneumothorax; extrapleural thoracoplasty, which is to be considered if adhesions make artificial pneumothorax impossible; paravertebral resection (Sauerbruch), which consists of a more or less extensive resection of the first to the eleventh ribs; filling the lung cavities with paraffin (Baer); resection of the cartilage of the uppermost ribs on the ground that ossification of this cartilage has brought about a narrowing of the upper thorax aperture (Freund), and other methods of less established value. Naegeli thinks that the results of surgical treatment of pulmonary tuberculosis (which, of course, is indicated only if other measures have been persistently tried and have failed) have been very gratifying.

Wiener klinische Wochenschrift, Vienna

Sept. 9, 1920, **33**, No. 37

Central Processes in Perception of Colors. O. Pötzl.—p. 811. Conc'n in No. 38, p. 844.
Differentiation of Microsporia and Trichophytosis. Stein.—p. 815.
Gunshot Injuries and Operative Treatment of Peripheral Nerves. K. Preleitner.—p. 818.
Fats of Tubercle Bacilli as Antigens. Bürger and Möllers.—p. 820.

Sept. 16, 1920, **33**, No. 38

Germ-Free Circular Spaces Produced on Bacteria Slides by Metals, Metallic Salts and Volatile Bactericides. A. Luger.—p. 833.
Inclusion Bodies in Idiopathic Herpes Zoster. B. Lipschütz.—p. 836.
Operation on Pedunculated Gastric Myoma. E. Neuber.—p. 838.
Diphtheria Bacilli in Pleural Empyema. W. Goldschmidt.—p. 840.
Microscopic Observation of Capillaries. E. Weiss.—p. 840.

Zeitschrift für Kinderheilkunde, Berlin

1920, **26**, No. 5

*Ultraviolet Rays in Tetany. K. Huldschinsky.—p. 207.
Epilepsy in Children. J. Husler.—p. 239.
*Whooping-Cough Convulsions and Spasmophilia. K. Blühdorn.—p. 251.

Ultraviolet Rays in Tetany.—Huldschinsky treated six cases of spasmophilous rickets. Symptoms of tetany would

disappear in from four days to four weeks; laryngospastic and clonic cramps even after the first intensive exposure. In five of these cases a reduction of the rachitic process was observed. It is recommended to administer lime during the first month of treatment, to assist the reduction of tetany, because rickets is not influenced by lime, while tetany may be wholly prevented by its use.

Convulsions in Whooping Cough.—Blühdorn recommends lumbar puncture and the simultaneous use of a narcotic in cases where spasmophilia or serous meningitis probably affect the etiology. Discussion of three fully described cases.

Zeitschrift für Tuberkulose, Leipzig

August, 1920, **32**, No. 5

*Index of Predisposition to Tuberculosis. H. Hollaender.—p. 257.
*Camphor in Treatment of Hemoptysis. K. Zehner.—p. 276.
Prevalence of Tuberculosis in Cattle in Europe. W. Seifert.—p. 283.
Begun in No. 4, p. 206.

The Immunity Reaction and the Prognosis Index in Tuberculosis.—Hollaender has found that the blood serum of certain persons is not modified when tuberculin is added to it, while others' serum shows more or less turbidity or precipitation. The serum of children usually behaves like that of the parents. His research seems to indicate that the element causing the precipitation is a specific antitoxin for the toxin of the tubercle bacillus. In other words, the reaction is an index of the individual's preparedness against tuberculous infection. This preparedness may fluctuate, the serum losing the precipitating property under certain conditions; he found this to be regularly the case in pregnant women near term and for a short time afterward. But they regained it then, and by building up the system and strengthening it in various ways and by prophylactic vaccine therapy the serum can acquire this precipitating property. The index is determined by adding to 0.5 c.c. of the centrifugated blood serum an equal amount of the tuberculin reagent. This reagent is made by diluting the official solution of tuberculin tenfold with physiologic sodium chlorid solution containing 0.5 per cent. phenol. The reagent is poured on top of the serum from a pipet to avoid mixing, keeping the line of contact distinct. The test tube is then corked and kept at 37 C. for twenty-four hours, handling carefully not to mix the two fluids. Then at the line of contact there will be found a more or less opaque zone between the two fluids or a loose ring of turbidity or a floating flake or merely a slight impairment of the transparency at the zone of contact, or both fluids may show no change and appear as evenly transparent as before. These different findings represent the different degrees of the defensive preparedness of the individual at the moment. They explain the true cause of the congenital or acquired predisposition to tuberculosis or the cause of the immunity. In the already infected, they show what the prospects are for throwing off the infection. Applied in connection with the tuberculin skin test, the findings class the subjects in ten grades. The skin tuberculin test reveals the *acquired* and the immunity serum reaction, the *natural* reaction to the tubercle bacillus toxin. Hollaender has found this index of great assistance in estimating the prognosis and guiding treatment at the institution in his charge at Budapest, and with its aid has produced a vaccine which, he says, seems to conform better than others to the requirements for prevention and cure.

Camphor in Treatment of Hemoptysis.—K. Zehner declares that camphorated oil must be regarded as the sovereign means to arrest profuse hemorrhage from the lungs. He theorizes to explain its action as mechanical and dynamic, in both stasis and perforation hemoptysis. Volland has been very successful with subcutaneous injection of from 25 to 30 gm. of 10 per cent. camphorated oil. Zehner gives moderate doses of the 20 per cent. and has scarcely ever known it to fail.

Zentralblatt für Chirurgie, Leipzig

Sept. 18, 1920, **47**, No. 38

*Osteochondritis Deformans Juvenilis Coxae. E. Kreuter.—p. 1162.
Improved Method of Suturing Muscular Layer to Poupart's Ligament in Herniotomy. M. Linnartz.—p. 1165.
Treatment of Fistulas Following Bone Lesions and Osteomyelitis. A. W. Fischer.—p. 1167.
Improved Technic for Operation on Harelip. T. Escher.—p. 1169.
Plastic Substitute for Paralyzed Trapezius. Szubinski.—p. 1172.

Etiology and Pathogenesis of Osteochondritis Deformans Juvenilis Coxae.—Kreuter gives four illustrations from a bilateral case of this disease in a girl of 9. The findings in this case and the investigations of Pommer, which he discusses, lead Kreuter to conclude that this osteochondritis must be regarded as a type of arthritis deformans and cannot be considered a distinct disease process of the infantile hip joint as Perthes believed when he proposed the name "osteochondritis deformans." That the disease should present different phases when developing in the bones of children below the age of puberty than it does in adults and in old age is naturally to be expected. In view of the different structure of the bones in the various stages of life, the manner in which the function of the bones is affected would, of course, differ. Kreuter emphasizes that it is not a juvenile but an infantile disease type, for which reason the powerful endosecretory influence of the still quiescent "puberty glands" plays no part in its development. In agreement with Pommer he thinks that in the reported case the impairment in the elasticity of the articular cartilage was the primary disturbance, that the subchondral processes must be regarded as secondary, and that the deformity of the epiphysis is the result of functional factors.

Zentralblatt für Gynäkologie, Leipzig

Sept. 18, 1920, **44**, No. 38

A Heterologous, Mixed Tumor of the Uterus. R. Schröder and A. Hillejahn.—p. 1050.
*Sign of Threatened Rupture of the Uterus. W. Auer.—p. 1058.
Etiology and Diagnosis of Tubal Pregnancy. M. Hirsch.—p. 1062.

Alleged Sign of Threatened Rupture of the Uterus.—Auer reports, on the basis of his investigations in the Universitäts-Frauenklinik in Bonn, that, not only during the expulsion period but also in the first stage of labor, consequently several hours before birth is complete, it was noted distinctly in 12 per cent. of all cases of childbirth that at least on one side the round ligament was pushed above a horizontal line through the navel, notwithstanding the regular course of labor. Therefore he cannot agree with Zweifel in regarding the upward displacement beyond the navel of the insertions of the round ligaments as a sign of threatened rupture of the uterus. He admits, however, that owing to the small number of cases further investigation of the subject is necessary.

Zentralblatt für innere Medizin, Leipzig

Sept. 18, 1920, **41**, No. 38

*Effect on Diuresis of Sodium Chlorid. Brunn.—p. 657.

Effect on Diuresis of Sodium Chlorid in Water Intake.—Brunn remarks that, with greater knowledge and better appreciation of factors outside the kidneys, which bear on the secretion of urine, the problem of diuresis has become not only more complicated but has also increased in importance both from the physiologic and the pathologic standpoint. As the result of his experiments he thinks we must modify our views in regard to the effect on diuresis of sodium chlorid. His experimental subjects were given in bed 1 liter of water at 8 a. m. The urine was collected every half hour until 12 o'clock, measured, tested for specific gravity and the total amount of sodium chlorid secreted during the four hour period determined. When 1 liter of tap water was given, more than the amount of fluid ingested was secreted in three hours. When distilled water was substituted, diuresis was not only not checked but seemed rather more rapid. When 3 gm. of sodium chlorid were added, not quite the whole amount of fluid ingested was secreted in four hours. With 6 gm. added, not much more than 8/10 of the fluid intake was secreted in the urine. With from 9 to 12 gm. added, only 50 per cent. of the fluid ingested was secreted within four hours; with 24 gm. only 33⅓ per cent. In spite of the greatly increased sodium chlorid intake, the amount of sodium chlorid secreted in the urine in the four hour period was never much increased and was often decreased. With additions of 12, 18 and 24 gm. of sodium bicarbonate, diuresis was checked in much the same manner as by sodium chlorid. The addition of sugar to water always caused an increase of diuresis; 100 gm. of sugar to 1 liter of water produced 1,600 c.c. of urine in four hours.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Oct. 2, 1920, **2**, No. 14

Is Tuberculosis a Children's Disease? J. de Bruin.—p. 1268.
*Tuberculin Treatment. P. J. L. de Bloeme.—p. 1284.
History of Tuberculosis. J. P. K. de Zwaan.—p. 1291.

Oct. 16, 1920, **2**, No. 16

*Surgical Tuberculosis. O. Lanz.—p. 1511.
*Immunity and Tuberculosis. K. Edel.—p. 1522.
Vestibular Tests with Ocular Paralysis. Weve and Sonnen.—p. 1528.
*Forceps Delivery and Later Development. J. H. Engelkens.—p. 1538.
Vision and Choice of Occupation. A. Verwey.—p. 1542.
*Medical Subjects in Dutch Art. G. van Rijnberk.—p. 1555.

Tuberculosis.—This and the following series of articles are lectures delivered in a graduate course on different aspects of tuberculosis. De Bloeme's presentation of tuberculin treatment confirms anew that after thirty years the question of tuberculin treatment is still unsolved. Lanz says of bone and joint tuberculosis that if all curative hygienic-dietetic measures can be applied, the prognosis is not unfavorable. Treatment of tuberculous joint lesions in children should always be conservative. He emphasizes the necessity for not letting children creep and play around on the unprotected floor. The tubercle bacilli get into their mouths from their hands, and get into their intestines from their soiled slice of bread and butter. It would be a good plan, he says, if we followed the example of the Orientals and put off our shoes before entering the house. As to renal tuberculosis, the mortality after nephrectomy has been constantly declining until now it is less than 4 per cent. In conclusion he mentions the case of a young man free from pathologic antecedents who consulted him on account of a nodule in the epididymis. He advised a vacation with local and general sun baths. In three weeks the sun rays had acted like a cataplasm, lighting up the cheesy focus found in the epididymis, with perforation and fistula.

Immunity to Tuberculosis.—In discussing in particular the immunity of the skin to tuberculosis, Edel relates the case of a woman with lupus who developed pulmonary tuberculosis after the lupus had been cured. The lung lesions also subsided under treatment, but then the lupus recurred. He ascribes this to production of antibodies in one local process which kept the other local process under control; when this was cured, the other got a chance to flare up.

Forceps Children.—Engelkens has been reexamining children delivered by forceps. The total thus delivered at the Amsterdam and Groningen maternities, 1900-1914, was 448, but only 232 could be traced to date. Among these were 2 children with epilepsy, 2 with chorea, 2 who had had convulsions, 1 idiot, 1 with congenital torticollis, 2 imbeciles, and 4 feeble-minded. But in this entire group other factors were manifestly responsible for the abnormality except in one of the epileptic children and possibly one of the imbeciles. His conclusion is that injury from forceps extraction properly done may be regarded as practically negligible.

Medical Subjects in Dutch Art.—In this instalment van Rijnberk reproduces six engravings showing the quack practice common in the sixteenth century of ostensibly cutting stones out of the forehead, the confederate under the table handing up the stones. Only one of the engravings shows the operator and the patient alone and so intent on the procedure that there is a possibility that this portrays a bona fide attempt to remove a calculus or foreign body.

Hospitalstidende, Copenhagen

Dec. 17 to 31, 1919, **62**, Nos. 51-53

*Involvement of the Rectum in Gonorrhea in Women. H. Boas.—p. 1377.
Herpetiform Dermatitis with Toxic Psychosis. H. Boas.—p. 1383.
Case of Recurring Myositis. R. M. Fog.—p. 1401.
*Recurring Papillomas in Larynx of Children. A. Plum.—p. 1405.
Conc'n in No. 53, p. 1421.
Artificial Pneumothorax in Pleurisy with Effusion. E. Als.—p. 1431.

Gonococcus Infection of the Rectum in Women.—Boas found the rectum involved in fourteen of eighty-eight women with gonorrhea. The gonorrheal proctitis did not cause any special subjective or objective disturbance, and it proved amenable to treatment in most of the cases. This consisted in irrigation with a hot solution of potassium permanganate, retained in the rectum. He urges the necessity for examining for involvement of the rectum in every case.

Recurring Papillomas in the Larynx in Children.—Plum reviews the literature on this subject and the experiences in Schmiegelow's service with sixteen cases. Tracheotomy was required in two infants and in six of the nine given endolaryngeal treatment. The results with radium treatment of the recurring papillomas were very encouraging in two of the four cases in which it was applied. Otherwise the treatment consisted in laryngoscopy every two or four weeks and removal with excision with Paterson's clamp of any recurring papillomas. This had to be kept up from three to forty-nine months, with an average of two and a half years. The procedure was repeated in one case thirty-two times, but fourteen was the average.

Norsk Magazin for Lægevidenskaben, Christiania

November, 1920, **81**, No. 11

*Cardiac Arrhythmia; Auto-Observation. H. J. Vetlesen.—p. 1057.
*Spondylitis Deformans. F. Harbitz.—p. 1076.
*Local Anesthesia for Abdominal Operations. S. Widerøe and O. C. Borchgrevink.—p. 1086.
*Missed Delivery for Five Years. G. Schaanning.—p. 1103.
*Early Arteriosclerosis. O. Lie.—p. 1115.

Cardiac Arrhythmia.—Vetlesen describes in detail his own experience with recurring attacks of delirium cordis, the attacks growing constantly more numerous and longer until finally one lasted for sixty-nine days. It was arrested after failure of other measures by chinidin sulphate, which aborted also the seven attacks he has had since. He comments on his disinclination to submit his case to specialist diagnosis and prognosis—his longing was only for effectual treatment, the usual point of view of the patient, lay or medical.

Spondylitis Deformans.—Harbitz found the vertebrae fragile and porous and the spine bent and rigid in the woman of 72 who had suffered from pains in the spine at times for thirty years, accompanied sometimes by fever. The intervertebral disks had entirely disappeared, and the lumbar vertebrae displayed a tendency to crumble after dissection. There was also old arthritis deformans of the knees and hip joints. Everything testifies to the infectious nature of the spondylosis.

Local Anesthesia for Abdominal Operations.—The various methods for local anesthesia and nerve blocking are described and compared, and their application in 86 per cent. of 44 operations on the stomach; in 89 per cent. of 18 on the bile passages; in 43 per cent. of 28 operations on the intestines, and in 93 per cent. of 27 intra-abdominal abscesses. Gynecologic operations are the least adapted for these methods of anesthesia of all abdominal interventions, and Widerøe and Borchgrevink resorted to them only in 25 per cent. of their 25 operations of this kind in the given period. They prefer Braun's method of blocking the splanchnic nerves by infiltrating them with a needle 12 cm. long introduced down to the spine, between the aorta and the vena cava. This blocks also the celiac ganglion and the superior mesenteric plexus.

Missed Delivery.—Schaanning tells of a woman of 44 who after eleven years of sterility became pregnant, and at about the ninth month had a period of severe pain but no hemorrhage. The movements of the fetus were not felt after the eighth month, and at term there were pains suggesting labor but no other signs of delivery. She was healthy after this for five or six years, her abdomen somewhat enlarged, but otherwise apparently normal until a transient eczema brought her to a physician. He palpated a hard tumor in the abdomen, and extracted a fetus lying freely movable in the abdominal cavity, enveloped still in its membranes. The fetus measured about 40 cm. in length but there were no signs of irritation from its presence.

Arteriosclerosis in Relation to Dementia Praecox.—Lie has examined from this point of view seventy men and forty-two women with dementia praecox during the last three years. Peripheral arteriosclerosis was evident in 54.4 per cent. of the men and in 10.5 per cent. of the women. Syphilis could be directly incriminated only in two cases, but all the men and some of the women were tobacco users. Most had begun to use tobacco between 12 and 15, but one had begun at the age of 4 or 5 and one at 6.